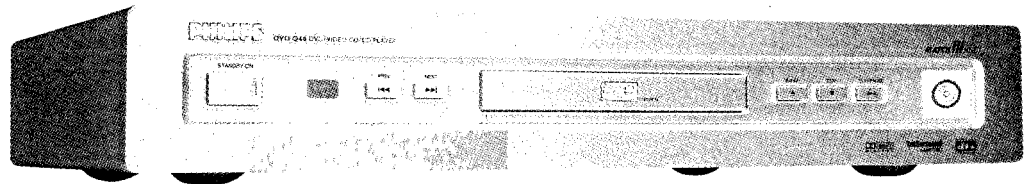


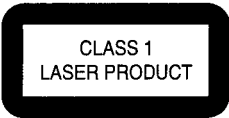
Service
Service
Service

DVDQ40 /001/021/051
DVDQ50 /001/021/051



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Service Manual



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PHILIPS

1. Technical Specifications

Specifications

PLAYBACK SYSTEM

DVD Video
Video CD & SVCD
CD (CD-Recordable and CD-Rewritable)
DVD+RW
MP3

OPTICAL READOUT SYSTEM

Laser type Semiconductor AlGaAs
Numerical Aperture 0.60 (DVD)
0.45 (VCD/CD)
Wavelength 650 nm (DVD)
780 nm (VCD/CD)

DVD DISC FORMAT

Medium Optical Disc
Diameter 12cm (8cm)
Playing time One layer 2.15 h*
(12cm) Dual layer 4 h*
Two side 4.30 h*
Single layer
Two side 8 h*
Dual layer

VIDEO FORMAT

DA Converter 10 bits (S-Video & CVBS)
10 bits, 54 MHz
(Pr/Cr Pb/Cb Y Component Video Out)
Signal handling Components
Digital Compression MPEG2 for DVD,
MPEG1 for VCD

TV STANDARD

	(PAL/50Hz)	(NTSC/60Hz)
Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

DVD

Horizontal Resolution	720 pixels	720 pixels
Vertical Resolution	576 lines	480 lines

VCD

Horizontal Resolution	352 pixels	352 pixels
Vertical Resolution	288 lines	240 lines

VIDEO PERFORMANCE

Video output 1 Vpp into 75 ohm
S-Video output Y: 1 Vpp into 75 ohm
C: 0.3 Vpp into 75 ohm
Component video output Y: 1 Vpp into 75 ohm
Pb/Cb Pr/Cr: 0.7 Vpp into 75 ohm
RGB (SCART) output 0.7 Vpp into 75 ohm
Black Level Shift On/Off
Video Shift Left/Right

AUDIO FORMAT

Digital	MPEG	Compressed Digital
	DTS/Dolby Digital	
	PCM	16, 20, 24 bits
		fs, 44.1, 48, 96 kHz
		MPEG Audio L3

MPEG MP3

Analog Sound Stereo

Dolby Pro Logic downmix from Dolby Digital multi-channel sound

Full decoding of Dolby Digital and DTS multi-channel surround sound

3D Sound (TruSurround) for virtual 5.1 channel sound on 2 speakers

AUDIO PERFORMANCE

DA Converter	24 bits	
DVD	fs 96 kHz	4 Hz - 44 kHz
	fs 48 kHz	4 Hz - 22 kHz
Video CD	fs 44.1 kHz	4 Hz - 20 kHz
CD	fs 44.1 kHz	4 Hz - 20 kHz
Signal-Noise (1kHz)		110 dB
Dynamic Range (1kHz)		100 dB
Crosstalk (1kHz)		110 dB
Distortion and Noise (1kHz)		98 dB

CONNECTIONS

SCART	Euroconnector
Y Output	Cinch (green)
Pb/Cb Output	Cinch (blue)
Pr/Cr Output	Cinch (red)
S-Video Output	Mini DIN, 4 pins
Video Output	Cinch (yellow)
Audio L+R output	Cinch (white/red)

6 Channel Analog Output

Audio Front Left/Right	Cinch (white/red)
Audio Surround Left/Right	Cinch (white/red)
Audio Centre	Cinch (blue)
Audio Subwoofer	Cinch (black)
Digital Output	1 coaxial, 1 optical
	IEC958 for CDDA / LPCM
	IEC1937 for MPEG1/2, Dolby Digital and DTS

CABINET

Dimensions (w x h x d)	435 x 72.5 x 291 mm
Weight	Approximately 3 Kg

GENERAL FUNCTIONALITY

Stop / Play / Pause
Fast Forward / Backward
Time Search
Step Forward / Backward
Slow Motion
Title / Chapter / Track Select
Skip Next / Previous
Repeat (Chapter / Title / All) or (Track / All)
A-B Repeat
Shuffle
Scan
New enhanced user graphical interface
Perfect Still with digital multi-tap filter
Zoom (x1.33, x2, x4) with picture enhancement
Smart Picture for convenient personal Colour setting
Digital Crystal Clear
NTSC/PAL Conversion
Screen Saver (Dim 75% after 15 minutes)
5.1 channels user defines speaker settings
3D Sound (TruSurround)
Virtual Jog Shuttle
Audio and video bit rate indicator
Display Dim
Beeper
Wake up Timer
PCM Output

DVD FUNCTIONALITY

Multi-angle Selection
Audio Selection (one out of maximum eight languages)
Subtitles Selection (one out of maximum 32 languages)
Aspect Ratio conversion (16:9, 4:3 Letterbox, 4:3 Pan Scan)
Parental Control and Child Lock
Disc Menu support (Title Menu and Access Control)
Resume (5 discs) after stop / standby
Programming Titles/chapters with Favorite Track Selection

VIDEO CD FUNCTIONALITY

Playback Control for VCD 2.0 discs
Child Lock
Resume (5 discs) after stop / standby
Programming Tracks with Favorite Track Selection

AUDIO CD FUNCTIONALITY

Time Display (Total / Track / Remaining Track Time)
Full audio functionality with remote control
Programming with Favorite Track Selection

MP3 FUNCTIONALITY

Time Display (Track)
Album and Track Selection
Repeat (Disc / Album / Track)

* typical playing time for movie with 2 spoken languages and 3 subtitle languages

Specifications subject to change without prior notice

2. Warnings And Laser Safety Instructions

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.

Keep components and tools also at this potential.

ESD



NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.

Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle IC und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).

Unvorsichtige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern. Sorgen Sie dafür, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.

Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt terug gebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden. Für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambio identici a quelli specificati.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

SHOCK, FIRE HAZARD SERVICE TEST:

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom, Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer.

Ref.UL Standard NO.1492.

NOTE ON SAFETY:

Symbol **⚡** : Fire or electrical shock hazard. Only original parts should be used to replace any part with symbol **⚡**. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

LASER DEVICE UNIT

Type:	SemiconductorlaserGaAIAs
Wave length:	650 nm (DVD) 780 nm (VCD/CD)
Output Power:	7 mW (DVD) 10 mW (VCD/CD)
Beam divergence:	60 degree



USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURE OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

AVOID DIRECT EXPOSURE TO BEAM

WARNING

The use of optical instruments with this product will increase eye hazard.
Repair handling should take place as much as possible with a disc loaded inside the player

WARNING LOCATION: INSIDE ON LASER COVERSIELD

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
 ADVARSEL SYNLIIG OG USYNLIIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
 ADVARSEL SYNLIIG OG USYNLIIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
 VARNING SYNLIIG OCH OSYNLIIG LASERSTRÅLNING NÅR DENNA DEL ÅR ÖPPNAD BETRAKTA EJ STRÅLEN
 VARO! AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
 VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
 DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
 ATTENTION RAYO NNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Warning for powersupply on position 1005

The primary side of the powersupply including the heatsink carries live mains voltage when the player is connected to the mains even when the player is switched off !

This primary area is not shielded so it is possible to touch copper tracks and/or components when servicing the player. Service personnel have to take precautions to prevent touching this area or components in this area .

The primary side of the powersupply has been indicated with a lightning stroke and a stripe-marked printed on the printed wiring board

2.1 Notes

2.1.1 DVD-Module

For repair of the DVD-module SD3, the service manual 3122 785 11010 has to be used.

2.1.2 ComPair

For assistance with the repair process of the monoboard an electronic Fault finding guidance has been developed , this program is called ComPair.

This ComPair program is available on CDROM.

The Version of the CDROM for repair of the monoboard is V1.3 or higher and can be ordered with codenumber : 4822 727 21637.

This is an update CDROM , so when the COMPAIR CDROM is used for the first time , one has to install the ComPair ENGINE CDROM V1.2 first.

The V1.2 CDROM can be ordered with codenumber 4822 727 634 and has to be registered after installation , the procedure for registration is explained in the help file of the program and in the booklet from the CDROM.

The cable to connect the monoboard with a PC can be ordered with codenumber 3122 785 90017.

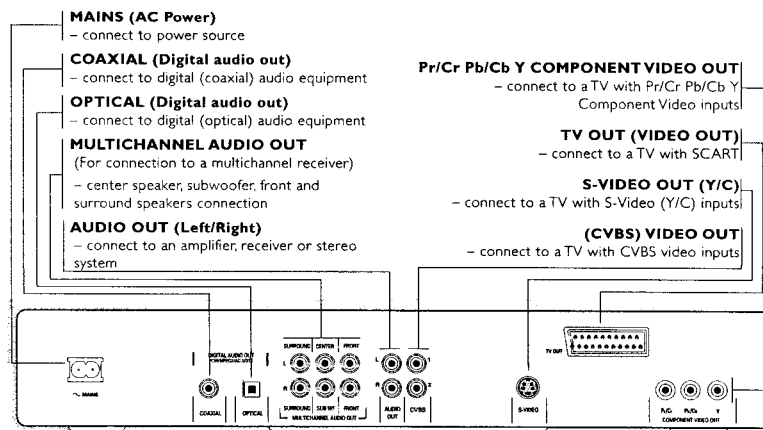
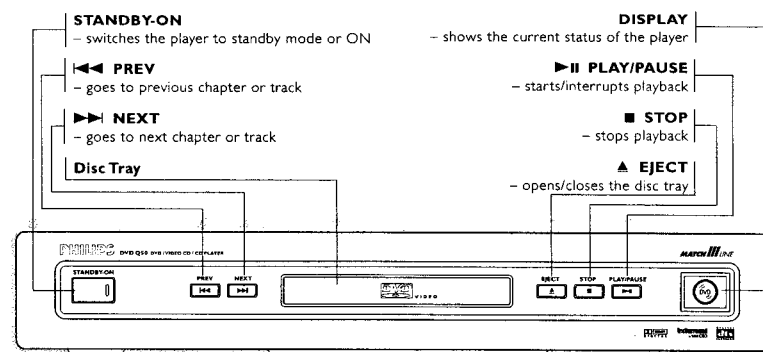
All the hardware and software requirements of the systems necessary for working with ComPair is described on the CDROM.

3. Directions For Use

English

Functional Overview

Front and Rear Panels



Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

Introduction

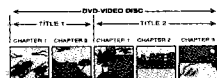
English

Philips DVD Video Introduction

Your Philips DVD Video player will play digital video discs conforming to the universal DVD Video standard. The unique features on DVD Video, such as selection of sound track, subtitle languages and different camera angles (again depending on the disc), are all supported. In addition to DVD Video discs, you will be able to play all Video CDs and Audio CDs.

DVD Video

You will recognize DVD Video discs by the logo shown. Depending on the material on the disc (a movie, video clips, a drama series, etc.) the disc may have one or more Titles.



Video CD

You will recognize Video CDs by the logo shown.



Super Video CD (SVCD)

SVCDs are based on the SuperVCD IO Standard, referring to the Standard of Electronics Industry of the People's Republic of China.

Audio CD

Audio CDs contain music tracks only. You will recognize Audio CDs by the logo shown.



MP3 (MPEG Audio Layer 3)

This player supports the MP3 format which contains compressed music tracks.

Note:

– Only the first session of multisession discs is supported.

Unpacking

First check and identify the contents of your DVD Video player package.

You should have the following items.

- DVD Video player
- AC power cord
- Remote Control with batteries
- Audio cable
- CVBS Video cable
- SCART cable
- Instructions for use

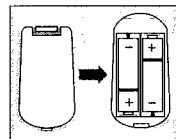
If any item is damaged or missing, contact your retailer or Philips.

Keep the packaging material for future transportation.

Remote Control Battery Installation

- Insert batteries as indicated inside the battery compartment.

Caution: Do not mix old and new batteries. Never mix different types of batteries (standard, alkaline, etc.).



Environmental Information

- Your system consists of materials that can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Safety Information

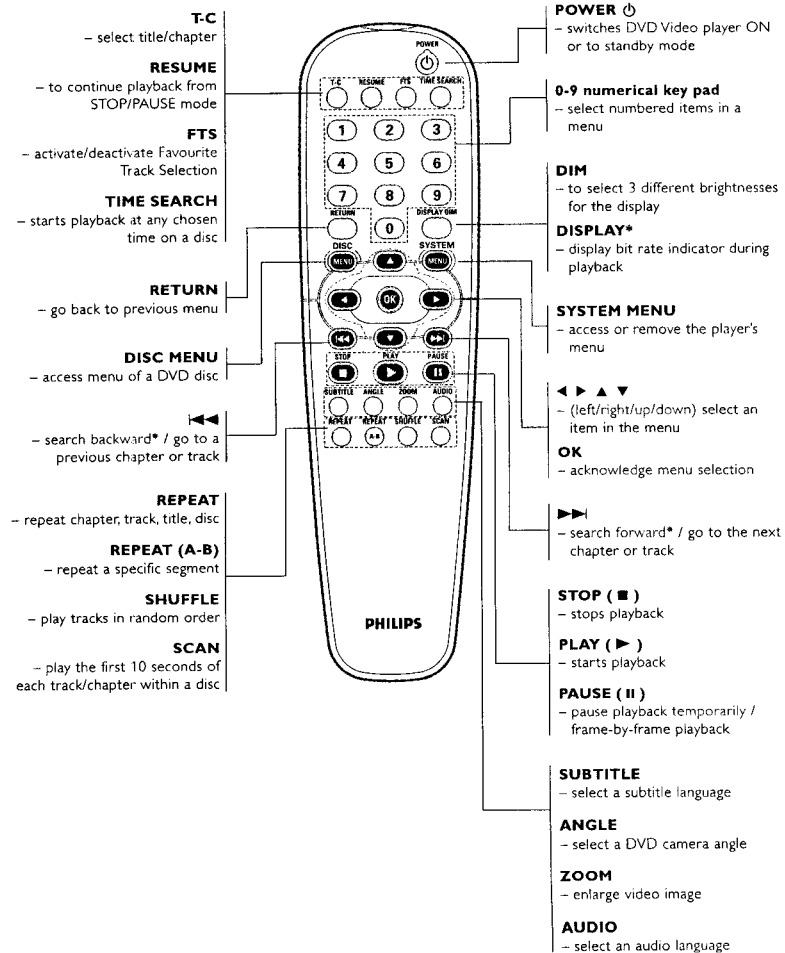
- Do not expose the system to excessive moisture, rain, sand, or heat sources.
- Place the player on a firm, flat surface.
- Keep the player away from domestic heating equipment and direct sunlight.
- In a cabinet, allow about 2.5 cm (1 inch) of free space all around the player for adequate ventilation.
- If the DVD Video player cannot read CDs/DVDs correctly, use a commonly available cleaning CD/DVD to clean the lens before taking the DVD Video player to be repaired. Other cleaning methods may destroy the lens. Always keep the tray closed to avoid dust on the lens.
- The lens may cloud over when the DVD Video player is suddenly moved from cold to warm surroundings. Playing a CD/DVD is not possible then. Leave the power on for about one hour with no disc in the unit until normal playback is possible.

Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out, in a straight line.
- Do not use solvents such as benzene, thinner, commercially available cleaners, or anti-static spray intended for analog discs.



Remote Control



* Press and hold key for about two seconds

Preparation

General Notes

- Depending on your TV and other equipment you wish to connect, there are various ways you could connect the player. Use only one of the connections described below.
- Please refer to the manuals of your TV, VCR, Stereo System or other devices as necessary to make the best connections.
- For better sound reproduction, connect the player's audio out jacks to the audio in jacks of your amplifier, receiver, stereo or audio/video equipment. See 'Connecting to Optional Equipment'.

Caution:

- Make sure the DVD player is connected directly to the TV. Set the TV to the correct video input channel.
- Do not connect the player's audio out jack to the phono in jack of your audio system.
- Do not connect your DVD player to the TV via your VCR. The DVD image could be distorted by the copy protection system.
- After all connections are made, connect the AC power cord to an AC power outlet in your home.

Connecting to a TV

- Make one of the following connections, depending on the capabilities of your existing equipment.

SCART connection

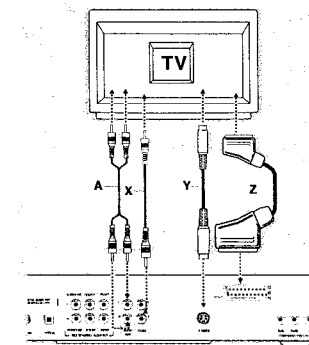
- Connect the SCART to the corresponding connector on the TV using the SCART cable supplied (Z).
- If your TV is not equipped with a SCART you can select one of the following alternative connections:

S-Video (Y/C) connection

- Connect the Y/C S-VIDEO OUT jack on the DVD player to the S-Video in jack on the TV using an optional S-Video cable (Y).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).

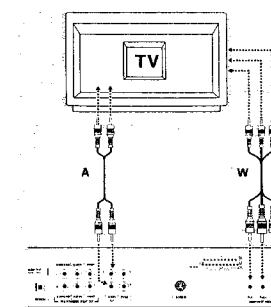
CVBS connection

- Connect the (CVBS) VIDEO OUT jack on the DVD player to the video in jack on the TV using the video cable supplied (X).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).



Component Video (Pr/Cr Pb/Cb Y) connection

- Connect the Pr/Cr Pb/Cb Y VIDEO OUT jacks on the DVD player to the corresponding in jacks on the TV using an optional Pr/Cr Pb/Cb Y cable (W).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).



Connecting to Optional Equipment

Connecting to an amplifier equipped with two channel analog stereo or Dolby Surround

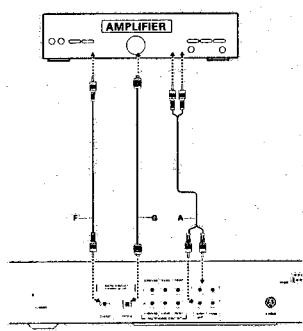
- 1 Connect the Left and Right audio out jacks of the DVD player to the audio left and right in jacks on your amplifier, receiver or stereo system, using the optional audio cable (A).

Note:
 – You cannot use the MP3 function with the Digital Out connectors.

Connecting to an amplifier equipped with two channel digital stereo (PCM) or to an Audio/Video receiver equipped with a multi-channel decoder (Dolby Digital™, MPEG 2 and DTS)

- 1 Connect the player's digital audio out jack (optical G or coaxial F) to the corresponding in jack on your amplifier. Use an optional digital (optical G or coaxial F) audio cable.
- 2 You will need to activate the player's digital output (see 'Personal Preferences').

Digital Multi-channel sound
 The digital multi-channel connection provides the best sound quality. For this you need a multi-channel A/V receiver that supports one or more of the audio formats supported by your DVD player (MPEG 2, Dolby Digital™ and DTS). Check the receiver manual and the logos on the front of the receiver.



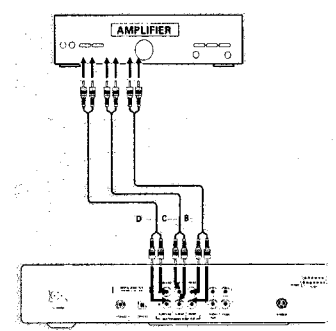
Warning:
 Due to DTS Licencing agreement, the digital output will also be in DTS digital out when DTS audio stream is selected.

Note:
 – If the audio format of the digital output does not match the capabilities of your receiver, the receiver will produce a strong, distorted sound or no sound at all.
 – Six Channel Digital Surround Sound via digital connection can only be obtained if your receiver has a Digital Multi-channel decoder.
 – To see the selected audio format of the current DVD in the Status Window, press SYSTEM MENU or Audio button.

Analog connection to a multi-channel A/V receiver with 6 CH connectors (Dolby Digital & DTS)

This DVD player contains a multi-channel decoder. This enables playback of DVDs recorded in Multi-channel Surround without the need for an optional decoder.

- 1 Connect the audio out jacks for Center speaker and Subwoofer connection (C) to the corresponding in jacks on your receiver.
- 2 Connect the audio Left and Right out jacks for Front speaker connection (B) to the corresponding in jack sockets on your receiver.
- 3 Connect the audio Left and Right out jacks for Surround speaker connection (D) to the corresponding in jacks on your receiver.
- 4 Make the appropriate Sound settings for Analog Output and Speaker Settings in the Personal Preferences menu.



NTSC/PAL Settings

You can switch the NTSC/PAL setting of the DVD player to match the video signal of your TV. This setting only affects the television's on-screen display that shows the stop and setup modes. You may select either NTSC or PAL. To change the DVD player setting to PAL or NTSC, follow the steps below.

- 1 Unplug the DVD player from the mains.
- 2 Press and hold ■ and ►, on the front of the DVD player. While holding ■ and ►, plug in the mains.
- 3 After PAL or NTSC appears on the display of the DVD player, release ■ and ► at the same time. The PAL or NTSC indicator that appears on the display indicates the current setting.
- 4 To change the setting, press ► within three seconds. The new setting (PAL or NTSC) will appear on the display.

NTSC/PAL Conversion

This player is equipped with a NTSC/PAL conversion feature to convert the video output of the disc to match your TV system. The conversions supported are as below:

Type	Disc	Format	Output format Selected mode		
			NTSC	PAL	AUTO
DVD		NTSC	NTSC	PAL	NTSC
		PAL	NTSC	PAL	PAL
VCD		NTSC	NTSC	PAL	NTSC
		PAL	NTSC	PAL	PAL

- 1 In the Preference Menu, select TV System.
- 2 Press ▲ or ▼ to select PAL, NTSC or AUTO.

Notes:
 – AUTO can only be selected when using a TV that has both the NTSC and PAL systems.
 – This is applicable for CVBS output on cinch and SCART only.
 – Slight picture distortions may occur due to this conversion. This is normal. Thus, the AUTO format is most suitable for the best picture quality.

General Explanation

About this manual

This manual gives the basic instructions for operating the DVD player. Some DVDs require specific operation or allow only limited operation during playback. When this occurs, the symbol ✕ appears on the TV screen, indicating that the operation is not permitted by the player or the disc.

Remote control operation

- Unless stated, all operations can be performed by the remote control. Always point the remote control directly at the player, making sure there are no obstructions between the remote and the player. Corresponding keys on the front panel of the player can also be used.

Menu bar operation

- A number of operations can be done with the menu bar on the screen. The menu bar icons can be accessed by pressing the cursor keys on the remote control.
- Pressing SYSTEM MENU while the menu bar is displayed will clear the menu bar from the screen.
- The selected item will be highlighted, and the appropriate cursor keys to operate it will be displayed below the icon.
- The symbols < or > indicate more items are available at the left/right of the menu bar. Press ◀ or ▶ to select these items.

Initial Setup (Virgin Mode)

General

In 'Initial Setup' you may have to set your preferences for some of the player's features. (not applicable for all models)

Operation

After switching on the player for the very first time, the 'Initial Setup Screen' will appear.
The menu for the first item to be set is displayed and the first option is highlighted.

- Use the ∇ \blacktriangle keys to go through the options in the menu. The icon of the selected option will be highlighted.
- Use OK to confirm your selection and to go to the next menu.

Note:

- Preferences have to be set in the order of which the item menus will appear on the screen.
- The 'Initial Setup' screen will only disappear after the settings for the last item have been confirmed.
- If any keys other than ∇ \blacktriangle or OK are pressed, \times will appear on the screen.
- If the player is switched off while setting personal preferences, all preferences have to be set again after switching the player on again.

The following items may have to be set in Initial Setup:

Menu language

You can choose from different languages. The On Screen Menus will be displayed in the language available on the player.

Audio language

You can choose from different languages. If available on the disc, the player will play the audio in the selected language. If the selected language is not available, speech will revert to the first spoken language on the disc.

Subtitle language

You can choose from different subtitle languages. If available on the disc, subtitles will be in the language chosen. If the selected language is not available, subtitles will revert to the first subtitle language on the disc.

TV Shape

If you have a wide screen (16:9) TV, select 16:9.
If you have a regular (4:3) TV, select 4:3.

If you have a 4:3 TV, you can also select between: Letterbox for a 'wide-screen' picture with black bars top and bottom, or Pan Scan, for a full-height picture with the sides trimmed. If a disc supports the format, the picture will be shown accordingly.

Country

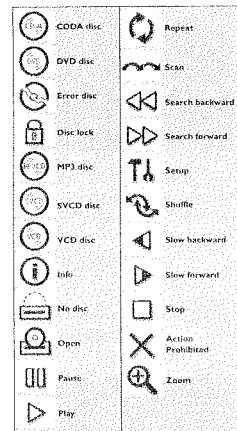
Select your country. This is used as input for the 'Parental Control' feature (see 'Access Control').

Note:

- All these items may have to be set during 'Initial Setup'. After that, they can always be changed in the Personal Preferences Menu.

Display on Front Panel

Various icons will appear on the front panel display depending on the current status of the player.



Menu Bar on TV Screen

As there are multiple menu bars, the items on the menu bar are arranged according to usage and availability of direct access keys. Pressing the SYSTEM MENU keys repeatedly will toggle through menu bar 1, menu bar 2, menu bar 3 and OFF.

Menu bar 1

- Personal Preferences
- Subtitle Language
- Audio Language
- Colour Setting (Smart Picture)
- Sound

Menu bar 2

- Step by step playback
- Slow motion
- Fast motion
- Angle
- Zoom

Menu bar 3

- Title
- Chapter
- Time Search
- Favorite Track Selection (FTS)
- Wake up Timer

Temporary Feedback Field Icons

- Scan
- Repeat All
- Repeat Title
- Repeat Track
- Repeat Chapter
- Shuffle
- Shuffle Repeat
- Repeat A to end
- Repeat A-B
- Angle
- Child Lock On
- Child Safe
- Resume
- Action prohibited

Personal Preferences

You can set your own personal preferences on the player.

General operation:

- Press SYSTEM MENU on the remote control.
- Select in the menu bar:
→ The Personal Preferences menu appears.
- Use the \blacktriangle \blacktriangledown keys to toggle through the menus, submenus and submenu options.
→ When a menu item is selected, the cursor keys (on the remote control) to operate the item are displayed next to the item.
- Press OK to confirm and return to the main menu. The following items can be adapted:

Picture

– TV Shape

If you have a wide screen (16:9) TV, select 16:9.
If you have a regular (4:3) TV, select 4:3.
If you have a 4:3 TV, you can also select between: Letterbox for a 'wide-screen' picture with black bars at the top and bottom of the screen, or Pan Scan, for a full-height picture with the sides trimmed. If a disc supports the format, the picture will be shown accordingly.

– Black level shift (NTSC users only)

Select ON for adapting the Colour dynamics to obtain richer contrasts.



– Video shift

The factory centers the video on your TV screen. Use this setting to personalize the position of the picture on your TV by moving it to the left or right.



– Colour settings

You can select one of five predefined sets of colour settings and one set (Personal) which you can define yourself.



– Personal colour

Allows you to fine-tune the selected colour settings saturation, brightness and contrast.

– DCC (on Pr/Cr Pb/Cb Y Component Video Out only)

Digital Crystal Clear (DCC) allows you to fine-tune the following parameters on the progressive scan component output.

- **Gamma** - allows you to adjust the intensity of the picture non-linearly. A positive value will allow you to bring out low level detail on dark scene while a negative value will emphasis on contrast.
- **Sharpness** - allows you to adjust sharpness of the picture.
- **Chroma Delay** - is where the Chroma (color) and luma (brightness) signal is out of synchronize. This allows you to adjust the advance delay of the chroma signal to yield a perfectly clear picture.

– TV System

Allows you to select between PAL, NTSC and AUTO mode depending on your TV.

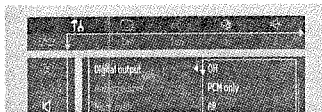
Note:

– Refer to "NTSC/PAL Conversion".

Sound

– Digital output

Factory setting: ALL. This means coaxial and optical output is on. If you are not connecting to equipment with a digital input, change the setting to OFF. If your equipment doesn't include a digital multi-channel decoder, set the digital output to PCM only (Pulse Code Modulation).



– Analog output

Select Stereo, Dolby Surround, 3D Sound (TruSound) or multichannel output to match your system's playback capability.

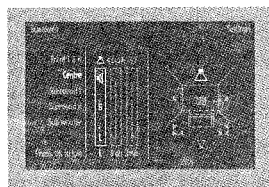


– Night Mode

Optimizes the dynamics of the sound for low volume playback.

– Speaker settings

Allows you to select speaker settings, volume balance and delay time and to test the speaker settings. Speaker settings are only active on the Analog Multi-Channel Output. (See appendix)



– PCM Output

Allows to select PCM digital output between 48kHz and 96kHz. When 48kHz has been selected, 96kHz (if available on disc) PCM data stream will be converted to 48kHz.

– Karaoke vocal

Put this setting to ON only when a multi-channel karaoke DVD is being played. The karaoke channels on the disc will then be mixed into a normal stereo sound.

Language

Select the required Menu, Audio and Subtitle language. Audio language and Subtitle language can also be adapted using the Menu bar.

Features

– Access Control

Access Control contains the following features:
Child Lock - When Child Lock is set to ON, a 4-digit code must be entered in order to play discs.
Parental control - Allows the conditional viewing of DVDs containing Parental Control information (see 'Access Control').

– Status Window

Displays the current status of the player and appears with the menu bar. When disc playback is stopped, it is displayed with the 'Temporary Feedback Field' in the default screen. See 'On-Screen Display' information.
 The factory setting is ON. Select OFF to suppress display of the Status Window.



– DIM

You can select the desired brightness for the front panel display.

- Normal brightness will appear on the display when you press **DISPLAY DIM** on the remote control.
- Medium brightness will appear on the display when you press **DISPLAY DIM** a second time on the remote control.
- Low brightness will appear on the display when you press **DISPLAY DIM** a third time on the remote control.
- Brightness will turn OFF when you press **DISPLAY DIM** a fourth time on the remote control.

– Bit Rate Indicator

Press and hold **DISPLAY DIM** key for 2 seconds. When activated, the bit rate for video and audio, as well as the total bit rate is displayed. This is only applicable during playback of DVD and SVCD discs.



– Help text

When set to ON, help text describes the icons selected. Select OFF if you no longer require the help text.

– Low Power Standby

If this is set to ON, the player will go in low-power standby when the standby button is pressed (front panel or remote control).

– Beeper

The beeper can be set to ON or OFF.

– PBC (Playback Control)

The Playback Control can be set to ON or OFF.

– Smart Power OFF

Puts the set to standby after a predefined time. This can be set to ON or OFF.

Operation

Loading Discs

- 1 Press EJECT on the front of the player to open the disc tray.
- 2 Load your chosen disc in the tray, label side up.
- 3 Press EJECT again to close the tray.
→ REPEAT appears in the status window and on the player display, and playback starts automatically.

Note:

— If 'Child Lock' is set to ON and the disc inserted is not authorized, the 4-digit code must be entered and/or the disc must be authorized (see 'Access Control').

Playing a DVD Video and Video CD

Playing a disc

- After inserting the disc and closing the tray, playback starts automatically. The status window of the player display shows the type of disc loaded.
- The disc may invite you to select an item from a menu. If the selections are numbered, press the appropriate numerical key; if not, use the ∇ \blacktriangle \blacktriangleleft \blacktriangleright keys to highlight your selection, then press OK.
- The number of the current title and chapter are displayed.
- Playback may stop at the end of the Title and you may return to the DVD disc menu. To go to the next title, press \blacktriangleright .
- To stop playback, press \blacksquare .
→ The default screen will appear, giving information about the current status.
- You can resume playback from the point at which you stopped playback. Press \blacktriangleright ; when you see the Resume icon \blacktriangleright on the screen, press \blacktriangleright again.
→ The RESUME feature applies not only to the disc in the player, but also to the last four discs you have played. Simply reload the disc and press RESUME on the remote control. Or, press \blacktriangleright when you see the Resume icon \blacktriangleright on the screen, then press \blacktriangleright again.

Note:

— DVDs may have a region code. Your player will not play discs that have a region code different from the region code of your player.



General Features

Note:

— Unless stated, all operations described are based on remote control use. Some operations can be carried out using the menu bar on the screen.

Moving to another title/ chapter

When a disc has more than one title or chapter, you can move to another title/chapter as follows:

- Press SYSTEM MENU, then select \blacksquare or \blacksquare in the menu bar.
- Press \blacktriangle or \blacktriangledown to select a title/chapter.



Slow Motion

- Select \blacksquare (SLOW MOTION) in the menu bar.
- Use the \blacktriangledown keys to enter the SLOW MOTION menu.
- Playback will pause.
- Use the cursor keys \blacktriangleleft \blacktriangleright to select the required speed: -1, -1/2, -1/4 or -1/8 (backward), or +1/8, +1/4, +1/2 or +1 (forward).
- Select 1 to play the disc at normal speed again.
- If \blacksquare is pressed, the speed will be set to zero (PAUSE).
- To exit slow motion mode, press \blacktriangleright or \blacktriangle .

Still Picture and Frame-by-frame playback

- Select \blacksquare (STEP) in the menu bar.
 - Use the \blacktriangledown key to enter the step by step menu.
 - Playback will pause.
 - Use the cursor keys \blacktriangleleft \blacktriangleright to select the previous or next picture frame.
 - To exit step by step playback, press \blacktriangleright or \blacktriangle .
- You can also step forward by pressing \blacksquare repeatedly on the remote control.



Scan

- Scanning plays the first 10 seconds of each chapter/track on the disc.
- Press SCAN.
 - To continue playback at your chosen chapter/track, press SCAN again or press \blacktriangleright .



Search

- Select \blacksquare (FAST MOTION) in the menu bar.
- Use the \blacktriangledown keys to enter the FAST MOTION menu.
- Use the \blacktriangleleft \blacktriangleright keys to select the required speed: -32, -8 or -4 (backward), or +4, +8, +32 (forward).
- Select 1 to play the disc at normal speed again.
- To exit FAST MOTION mode, press \blacktriangleright or \blacktriangle .



To search forward or backward through different speeds, you can also hold down \blacktriangleleft \blacktriangleright or \blacktriangleleft \blacktriangleright .

Repeat

DVD Video Discs

Repeat chapter/title/disc

- To repeat the current chapter, press REPEAT.
→ \blacksquare appears on the DVD player display.
- To repeat the current title, press REPEAT a second time.
→ \blacksquare appears on the DVD player display.
- To repeat the entire disc, press REPEAT a third time.
→ \blacksquare appears on the DVD player display.
- To exit Repeat mode, press REPEAT a fourth time.



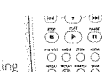
Video CDs

Repeat track/disc

- To repeat the current track, press REPEAT.
→ \blacksquare appears on the DVD player display.
- To repeat the entire disc, press REPEAT a second time.
→ \blacksquare appears on the DVD player display.
- To exit Repeat mode, press REPEAT a third time.

Repeat A-B

- To repeat a specific portion of a title:
Press REPEAT A-B at your chosen starting point.
→ \blacksquare appears briefly on the DVD player display.
- Press REPEAT A-B again at your chosen end point.
→ \blacksquare appears briefly on the DVD player display, and the repeat sequence begins.
- To cancel the sequence and continue regular playback, press REPEAT A-B.



Shuffle

DVD Video discs

This shuffles the playing order of chapters within a title, if the title has more than one chapter.

- Press SHUFFLE during playback.
→ SHUFFLE appears on the TV screen for about two seconds.
- To return to normal playback, press SHUFFLE again.



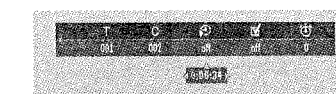
Video CDs

- Press SHUFFLE during playback.
→ SHUFFLE appears on the TV screen for about two seconds.
- To return to normal playback, press SHUFFLE again.

Time search

The Time Search function allows you to start playing at any chosen time on the disc.

- 1 Select \blacksquare (TIME SEARCH) in the menu bar.
- 2 Press \blacktriangledown .
→ Playback will pause.
→ A time edit box appears on the screen, showing the elapsed playing time of the current disc.
- 3 Use the numeric keys to enter the required start time.
Enter hours, minutes and seconds from left to right in the box.
→ Each time an item has been entered, the next item will be highlighted.
- 4 Press OK to confirm the start time.
→ The time edit box will disappear and playback starts from the selected time on the disc.

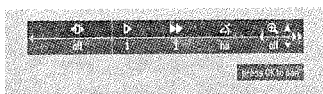


- 5 Press SYSTEM MENU to remove the menu bar.

Zoom

The Zoom function allows you to enlarge the video image and to pan through the enlarged image.

- Select **⏏** (**Zoom**).
- Press **▲▼** to activate the **Zoom** function and select the required zoom factor: 1.33 or 2 or 4.
→ Playback will pause.
→ The selected zoom factor appears below the Zoom icon in the menu bar and 'Press OK to pan' appears below the menu bar.
- The picture will change accordingly.
- Press OK to confirm the selection.
→ The panning icons appear on the screen.
- Use the **◀▶▲▼** keys to pan across the screen.
- When OK is pressed only the zoomed picture will be shown on the screen.
- To exit **Zoom** mode:
— Press **▶** to resume playback.



FTS-Video

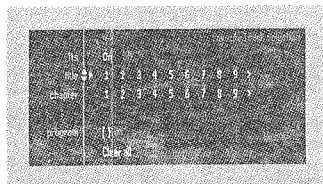
- The FTS-Video function allows you to store your favorite titles and chapters (DVD) and favorite tracks and indexes (VCD) for a particular disc in the player memory.
- FTS program can contain 20 items (titles, chapters etc.).
- A programmed FTS will be placed on top of the list when playback is activated. When the list is full, a new program will replace the last program on the list.
- The program can be selected and played at any time.

Storing an FTS-Video Program

- While playback is stopped, select **VIDEO FTS** **☑** in the menu bar.
- Press **▼** to open the menu.
→ The **VIDEO FTS** menu appears.
- Press **▶** or **◀** to select ON or OFF.

Storing titles/tracks

- Press **▼** to select **TITLES**.
- Use **▶** and **◀** to select the required title.
- Press OK if you wish to store the entire title.
→ The title number will be added to the list of selections.



Storing chapters/indexes

- Press **▼** on the selected title number:
→ The title number will be marked and the highlight moves to the first available chapter number for this title.
- Use **▶** and **◀** to select the required chapter number.
- Press OK to confirm the selection.
→ The title/chapter selection will be added to the list of selections.
- Press SYSTEM MENU to exit the **VIDEO FTS** **☑** menu.

Erasing an FTS-Video Program

- While playback is stopped, select **VIDEO FTS** **☑** in the menu bar.
- Use **▼** to select **PROGRAM**.
- Use **▶** and **◀** to select the required number.
- Press OK to erase the selection.
- Press SYSTEM MENU to exit.

Erasing all selections

- While playback is stopped, select **VIDEO FTS** **☑** in the menu bar.
- Use **▼** to select **CLEAR ALL**.
- Press OK.
→ All selections will be erased.
- Press SYSTEM MENU to exit.

Auto Wake-up Timer

The wake-up timer allows your player to turn on after a preset time.

- 1 Select **⏏** in the menu bar.
- 2 Press **▼**.
→ Time edit box will appear.
- 3 Use the **▲** or **▼** to select the sleep time. The maximum time you can select is 600 minutes. Selection is made by 30 minutes steps each time.
- 4 Press OK to confirm the selection.
- 5 The Wake-up Timer will activate when the set is switch to standby-mode.



Special DVD Features

Checking the contents of DVD Video discs: Menus

DVDs may contain menus to navigate the disc and access special features. To use the menu, press the appropriate numerical key or use the **▼**, **▲**, **▶**, **◀** keys to highlight your selection, then press OK.

Title/Disc menu

- Press **DISC MENU**.
→ If the current title has a menu, the menu will appear on the screen. Otherwise, the disc menu will be displayed.
- The menu can list camera angles, spoken language and subtitle options, and chapters for the title.
- To remove the title menu, press **DISC MENU** again.

Camera Angle

If the disc contains sequences recorded from different camera angles, the angle icon appears, showing the number of available angles and the angle being shown currently. You can then change the camera angle if you wish.
Use the **▲▼** keys to select the required angle.
→ After a while, playback changes to the selected angle. The angle icon remains displayed until multiple angles are no longer available.



Changing the audio language

- Select **⏏** (**AUDIO**) in the menu bar.
- Press **AUDIO** or **▲▼** repeatedly to see the different languages.



Subtitles

- Select **⏏** (**SUBTITLE**) in the menu bar.
- Press **SUBTITLE** or **▲▼** repeatedly to see the different subtitles.



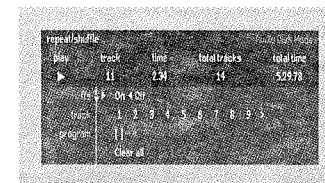
Special Video CD & SVCD Features

Playback Control (PBC)

- Load a Video CD with PBC and press **▶**.
- Go through the menu with the keys indicated on the TV screen until your chosen passage starts to play. If a **PBC** menu consists of a list of titles, you can select a title directly.
- Enter your choice with the numerical keys (0-9).
- Press RETURN to go back to the previous menu.
- You may also select **PBC OFF** under Personal Preferences.

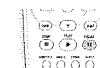
Playing an Audio CD

- After loading the disc, playback starts automatically.
- If the TV is on, the Audio CD screen appears.
- The number of tracks and the total playing time of the disc will be shown on the TV screen.
- During playback, the current track number and its elapsed playing time will be shown on the TV screen and on the player display.
- Playback will stop at the end of the disc.
- To stop playback at any other time, press **■**.



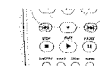
Pause

- Press **⏏** during playback.
- To return to playback, press **▶**.



Search

- To search forward or backward through the disc at four times the normal speed, hold down **⏏** or **⏏** for about one second during playback.
→ Search begins, and sound is partially muted.
- To step up to eight times the normal speed, press **⏏** or **⏏** again.
→ Search goes to eight times the speed, and the sound is muted.
- To return to four times the normal speed, press **⏏** or **⏏** again.
- If the TV is on, search speed and direction are indicated on the screen each time **⏏** or **⏏** is pressed.
- To end the search, press **▶** to resume playback or press **■** to stop playback.



Moving to another track

- Press **◀** or **▶** briefly during playback to go to the next track or to return to the beginning of the current track.
- Press **◀◀** twice briefly to step back to the previous track.
- To go directly to any track, enter the track number using the numerical keys (0-9).

Shuffle

- Press **SHUFFLE** during playback.
→ The playing order of the tracks is changed.
- To return to normal playback, press **SHUFFLE** again.

Repeat track/disc

- To repeat the current track, press **REPEAT**.
→ **REPEAT TRACK** appears on the DVD player display.
- To repeat the entire disc, press **REPEAT** a second time.
→ **REPEAT DISC** appears on the DVD player display.
- To exit Repeat mode, press **REPEAT** a third time.

Repeat A-B

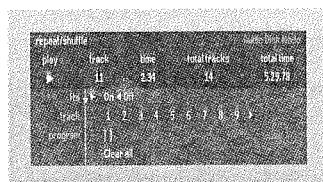
- To repeat a specific portion of a track:
- Press **REPEAT A-B** at your chosen starting point.
→ **REPEAT A-B** appears on the DVD player display.
 - Press **REPEAT A-B** again at your chosen end point.
→ **REPEAT A-B** appears on the DVD player display, and the sequence begins to play repeatedly.
 - To cancel the sequence and continue playback, press **REPEAT A-B**.

Scan

- Scanning plays the first 10 seconds of each track on the disc.
- Press **SCAN**.
 - To continue playback at your chosen track, press **SCAN** again or press **▶**.

Favorite Track Selection (FTS) Program

- The FTS Program allows you to store your favorite tracks for a particular disc in the player memory.
- Each FTS Program can contain 20 tracks.



Storing an FTS Program

- Load a disc and stop playback.
- Use **▼** to go to the list of available tracks.
- Use **▶** or **◀** to select tracks from the list.
To go directly to any track, enter the track number using the numerical keys (0-9).
- Store each track by pressing **OK**.
→ The track numbers will be added to the list.
→ The number of tracks and the playing time of the program will be shown on the TV screen and the player display.

When your FTS Program is complete, press **▶** to start playback or press **▲** to go back to Stop mode. In either case, the FTS Program will be automatically memorized.

Switching FTS ON/OFF

- Use **▲▼** to select FTS.
- Use **▶** or **◀** to select either ON or OFF.

Erasing a track from an FTS Program

- Use **▼** to go to the list of selected tracks.
- Use **▶** and **◀** to select the track number you wish to erase.
- Press **OK**.
→ The track number will be erased from the list of selected tracks.

Erasing the complete program

- Use **▼** to select **CLEAR ALL**, then press **OK**.
→ The complete FTS Program for the disc will be erased.

MP3 Disc Features (for specific version only)

Support following MP3-CD formats (ISO9660 format):

- Max. 30 characters
- Max. nested directory is 8 levels
- The max. ALB number is 32
- Supported VBR bit-rate
- Supported sampling frequencies for MP3 disc are: 32 kHz, 44.1 kHz, 48 kHz
- Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps)

Following formats can't be supported

- The files like *.WMA, *.AAC, *.DLF, *.M3U, *.PLS
- Chinese filenames
- The non-session closed discs
- The discs recorded under UDF format

Downloading MP3 files from the Internet or copying songs from your own legal discs is a delicate process.

Sound Quality	Bit Rate	Approximate Reduction Ratio	Approximate total MP3-CD time	Comment
MP3 audio	128 kbps	40:1	40 hrs	Sound quality significantly reduced
MP3 audio	64 kbps	20:1	20 hrs	Not recommended
Newer CD	96 kbps	15:1	15 hrs	Balanced sound quality compression rate
CD audio	128 kbps	10:1	10 hrs	
CD	256 kbps	5:1	5 hrs	Compressed but still subject to play CD's norms
CD	320 kbps	1:1	1 hrs	

You may experience an occasional "skip" while listening to your MP3 files. This is normal.

Additional note for MP3 disc Playback:

- In compliance with the SDMI, digital-out is muted while playing MP3 discs.
- Due to the recording nature of Digital Audio MP3 (DAM), only Digital Audio music will play.
- The disc reading time may exceed 10 seconds due to the large number of songs compiled onto one disc.
- Only the first session of multisession discs is supported.

Album/Title

This feature allows you to view and select the next or previous MP3 disc Album/Title.

- Press **▲▼** to scroll through the previous or next Album.
- Press **◀▶** to scroll through the previous or next Track.
- You can also select the desired album/track number directly using the numeric keys on the remote control.

Note:

- In **STOP mode**: numbers are used for **ALBUM** selection.
- In **PLAY mode**: numbers are used for **TRACK** selection.



- Only the following functions are possible for MP3 discs:
 - STOP / PLAY / PAUSE
 - SKIP NEXT / PREVIOUS
 - REPEAT (TRACK / ALBUM / DISC)

MP3 Discs - Album/Track/Disc

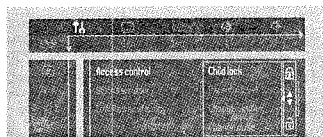
- To repeat a track, press **REPEAT**.
→ **REPEAT TRACK** appears on the TV screen.
- To repeat an album, press **REPEAT** a second time.
→ **REPEAT ALBUM** appears on the TV screen.
- To repeat the entire disc, press **REPEAT** a third time.
→ **REPEAT DISC** appears on the TV screen.
- To exit **REPEAT** mode, press **REPEAT** a fourth time.
→ **REPEAT OFF** appears on the TV screen.

Access Control

Access Control: Child Lock (DVD Video and Video CD)

Activating/deactivating the Child Lock

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the $\blacktriangle/\blacktriangledown$ keys.
 - Enter the code of your own choice.
 - Enter the code a second time.
 - Move to **"CHILD LOCK"** using the $\blacktriangle/\blacktriangledown$ keys.
 - Move to **LOCK/UNLOCK** using the \blacktriangleright key.
 - Select **LOCK** using the $\blacktriangle/\blacktriangledown$ keys.
 - Press OK or \blacktriangleleft to confirm, then press \blacktriangleleft again to exit the menu.
→ Now unauthorized discs will not be played unless the 4-digit code is entered.
 - Select **UNLOCK** to deactivate the **CHILD LOCK**.
- Note:** Confirmation of the 4-digit code is necessary when:
- The code is entered for the very first time (see above),
 - The code is changed (see 'Changing the 4-digit code'),
 - The code is cancelled (see 'Changing the 4-digit code').

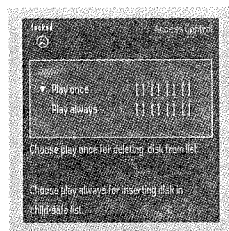


Authorizing discs

- Insert the disc. See 'Loading discs'.
→ The 'child protect' dialog will appear.
You will be asked to enter your secret code for 'Playback Once' or 'Playback Always'. If you select 'Playback Once', the disc can be played as long as it is in the player and the player is ON. If you select 'Playback Always', the disc will become child safe (authorized) and can always be played, even if the Child Lock is set to ON.

Notes:

- The player memory maintains a list of 120 authorized ('Child safe') disc titles. A disc will be placed in the list when 'Playback Always' is selected in the 'child protect' dialog.
- Each time a 'child safe' disc is played, it will be placed on top of the list. When the list is full and a new disc is added, the last disc in the list will be removed from the list.
- Double-sided DVDs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorized.
- Multi-volume VCDs may have a different ID for each volume. In order to make the complete set 'child safe', each volume has to be authorized.



Deauthorizing discs

- Insert the disc. See 'Loading discs'.
→ Playback starts automatically.
- Press \blacksquare while \odot is visible.
→ The \odot will appear and the disc is now deauthorized.

Access Control: Parental Control (DVD Video only)

Movies on DVDs may contain scenes not suitable for children. Therefore, discs may contain 'Parental Control' information which applies to the complete disc or to certain scenes on the disc. These scenes are rated from 1 to 8, and alternative, more suitable scenes are available on the disc. Ratings are country dependent. The 'Parental Control' feature allows you to prevent discs from being played by your children or to have certain discs played with alternative scenes.



Activating/Deactivating Parental Control

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the $\blacktriangle/\blacktriangledown$ keys.
- Enter your 4-digit code. If necessary, enter the code a second time.
- Move to **Parental Control** using the $\blacktriangle/\blacktriangledown$ keys.
- Move to **VALUE ADJUSTMENT** (1-8) using the \blacktriangleright key.
- Then use the $\blacktriangle/\blacktriangledown$ keys or the numerical keys on the remote control to select a rating from 1 to 8 for the disc inserted.

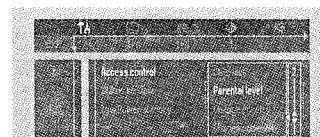
Rating 0 (displayed as '—'):

Parental Control is not activated. The Disc will be played in full.

Ratings 1 to 8:

The disc contains scenes not suitable for children. If you set a rating for the player, all scenes with the same rating or lower will be played. Higher rated scenes will not be played unless an alternative is available on the disc. The alternative must have the same rating or a lower one. If no suitable alternative is found, playback will stop and the 4-digit code has to be entered.

- Press OK or \blacktriangleleft to confirm, then press \blacktriangleleft again to exit the menu.



Country

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the $\blacktriangle/\blacktriangledown$ keys.
- Enter the 4-digit code.
- Move to **CHANGE COUNTRY** using the \blacktriangledown key.
- Press the \blacktriangleright key.
- Select a country using $\blacktriangle/\blacktriangledown$.
- Press OK or \blacktriangleleft to confirm, then press \blacktriangleleft again to exit the menu.

Changing the 4-digit code

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the $\blacktriangle/\blacktriangledown$ keys.
- Enter the old code.
- Move to **CHANGE CODE** using the \blacktriangledown key.
- Press the \blacktriangleright key.
- Enter the new 4-digit code.
- Enter the code a second time and reconfirm by pressing OK.
- Press \blacktriangleleft to exit the menu.

If you forget your 4 digit code

- Press \blacksquare to exit the 'Child Protect' screen.
- Select **ACCESS CONTROL** in the features menu using the $\blacktriangle/\blacktriangledown$ keys.
- Move to **ENTER CODE** using the \blacktriangleright key.
- The 4-digit code can be cancelled by pressing \blacksquare four times in the 'Access Control-Enter Code' dialog.
- You can then enter a new code (twice) as described above (Changing the 4 digit code).

Parental Control Disclaimer

This DVD player features the **PARENTAL CONTROL** system which is intended to activate when playing DVD discs furnished with certain software coding. This is according to technical standards adopted by the set maker and disc content industries.

Please note that the **PARENTAL CONTROL** system will not operate a DVD disc which is not furnished with the appropriate software coding. Also note that at the time of release of this DVD player, certain aspects of the technical standards had not been settled between set makers and the disc industries.

On this basis, Philips cannot guarantee the functioning of the **PARENTAL CONTROL** system and denies any liability associated with unintended watching of disc content.

If in doubt, please make sure the disc plays according to your **PARENTAL CONTROL** settings before you allow children access to the player.

Before Requesting Service

If it appears that the DVD Video player is faulty, first consult this checklist. Something may have been overlooked. Under no circumstances should you attempt to repair the system yourself; this will invalidate the warranty.

Look for the specific symptom(s). Then perform only the actions listed to remedy the specific symptom(s).

Symptom	Remedy
No power	<ul style="list-style-type: none"> Make sure the power cord is properly connected. Check if there is power at the AC outlet by plugging in another appliance.
No picture	<ul style="list-style-type: none"> Check if the TV is switched on. Check the video connection. Check if a DVD PAL format disc is inserted.
Distorted picture	<ul style="list-style-type: none"> Check the disc for fingerprints and clean the disc with a soft cloth, wiping from the center to the edge in a straight line. Sometimes a small amount of picture distortion may appear. This is not a malfunction.
Completely distorted picture or no Colour with player menu	<ul style="list-style-type: none"> If the picture is distorted completely or if the picture rolls vertically, make sure the NTSC/PAL setting at the DVD player matches the video signal of your television. If your TV video signal is NTSC, select the NTSC setting at the DVD player. If your video signal is PAL, select the PAL setting. - See NTSC/PAL SETTINGS.
Distorted or black/white picture with DVD or Video CD	<ul style="list-style-type: none"> The disc format does not match your TV's video signal (PAL/NTSC). If your video signal is PAL, see NTSC/PAL Conversion.
No sound	<ul style="list-style-type: none"> Check audio connections. If you are using a HiFi amplifier, try another sound source.
Distorted sound from HiFi amplifier	<ul style="list-style-type: none"> Check to make sure that no audio connections are made to the amplifier's phono input.
No audio at digital output	<ul style="list-style-type: none"> Check the digital connections. Check the settings menu to make sure the digital output is set to ALL or PCM. Check if the audio format of the selected audio language matches your receiver capabilities. Not applicable for MP3.
Disc can't be played	<ul style="list-style-type: none"> Ensure the disc label is facing up. Clean the disc. Check if the disc is defective by trying another disc. Check to see if the disc is defective, badly scratched or warped (not flat).
No return to start-up screen when disc is removed	<ul style="list-style-type: none"> Reset the unit by switching the player off, then on again. Check to see if the program requires another disc to be loaded.
The player does not respond to the remote control	<ul style="list-style-type: none"> Aim the remote control directly at the sensor on the front of the player. Remove any obstacles between the player and the remote control. Inspect or replace the batteries in the remote control.
Buttons do not work	<ul style="list-style-type: none"> In order to completely reset the player, unplug the AC cord from the AC outlet. (Please ensure that the set is not in Initial Setup mode.)
Player does not respond to some operating commands during playback	<ul style="list-style-type: none"> Operations may not be permitted by the disc. Refer to the instructions of the disc.
DVD Video player cannot read CDs/DVDs	<ul style="list-style-type: none"> Use a commercial audio playing CD/DVD to clean the lens before sending the DVD Video player for repair.

Appendix

Speaker Settings

6 Channel settings

Front speaker

- L (Large): When the front speakers can reproduce low frequency signals below 120Hz
 S (Small): When the front speakers cannot produce low frequency signals below 120Hz

Center Speaker

- L (Large): When the center speaker can reproduce low frequency signals below 120Hz
 S (Small): When the center speaker cannot produce low frequency signals below 120Hz
 Off: When the center speaker is not connected

Surround speakers

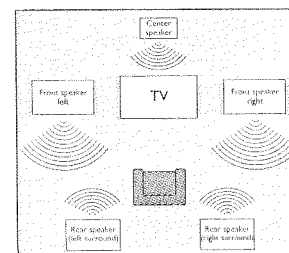
- L (Large): When the surround speakers can reproduce low frequency signals below 120Hz
 S (Small): When the surround speakers cannot produce low frequency signals below 120Hz
 Off: When the surround speakers are not connected

Subwoofer

- On: When you connect a subwoofer
 Off: When a subwoofer is not connected

Note:

- Certain speaker settings are prohibited by the Dolby Digital licensing agreement.

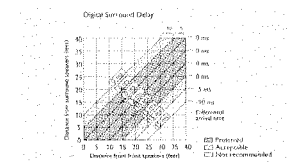


Delay times

The DVD player is set to reproduce correctly synchronized Digital Surround Sound in a listening area where the surround speakers are about 150cm nearer to the listening position than the front speakers, and the center speaker is in line with the front speakers. To adjust for other listening area arrangements, adapt delay times according to the following instructions:

Digital Surround

Measure the distances in centimeters from the front speaker and the surround speaker to the listening positioning. Subtract the surround distance from the front distance and divide by 30. The result is the required Surround Channel delay time in milliseconds. If the center speaker is in line with the front speaker, no center speaker delay is needed. If, however, it is nearer the listening position, measure the distance in centimeters between the front and center speaker planes, and divide by 30. The result is the required Center Channel delay time in milliseconds.



4. Mechanical Instructions

4.1 Dismantling Instructions

Mounting
↕
Dismounting

Cover 300
-> Remove 4 screws 310 and 3 screws 305
-> Lift cover from rear side to remove

Scart board 1006
(Only for EU model)
-> Remove flex connection to conn 1001 on scart board
-> Remove 2 screws 290 (scart to back-plate)
-> Dismount board

DTS board 1003
-> Remove 2 screws 265 (DTS brackets to back-plate)
-> Flip board over and remove flex connections
-> Dismount board

Power supply unit 1005
-> Remove connections
-> Remove 2 screws 190 (board to frame) and screw 270 (mains skt to back-plate)
-> Release snaps of 2 spacer 170 (board to frame)
-> Dismount board

A/V board 1001
-> Remove DTS board, flip it over and place it on the DVD module
-> Remove flex connections
-> Remove 5 screws 275 (skt cinch, optical to back-plate) and screw 280 (S-video to back-plate)
-> Release snaps of 2 spacers 175
-> Dismount board

P-scan board 1007
(Only for DVDQ50 models)
-> Remove connections
-> Remove screw 285 (skt cinch to back-plate) and 2 screws 200 (board to frame)
-> Release snap of spacer 178
-> Dismount board

DVD module 145
-> Remove front assy (see instruction)
-> Open tray (see instruction below)
-> Remove 4 screws 185 (Module to frame)
-> Lift module forward and remove connections to Mono-board
-> Dismount module

DVD Mono board
-> See also exploded view of DVD module
-> Removes flex connections to turntable motor and sledge motor
-> Remove 4 screws 10 to 13 (Mono-board to VAL6011)
-> Remove carefully flex connection to OPU and wire to the tray motor
-> Dismount board

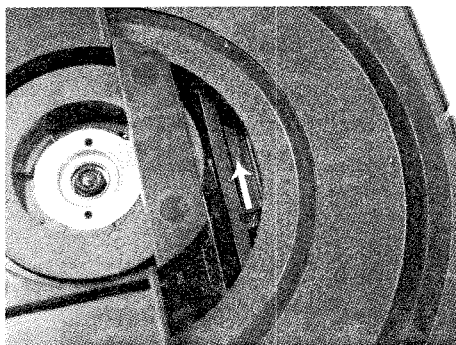
Front Assy 0001
-> Open Tray (see instruction below)
-> Unlock Tray front 210
-> Unlock front from frame by releasing successively 4 snaps (2 each on the side and bottom)
-> Place frontassy in front of the set (service position)

Front board 1002A
-> Remove connections
-> Remove 4 screws 110 (board to front)
-> Removes flex connectors to Conn. 1116 and 1117
-> Dismount board

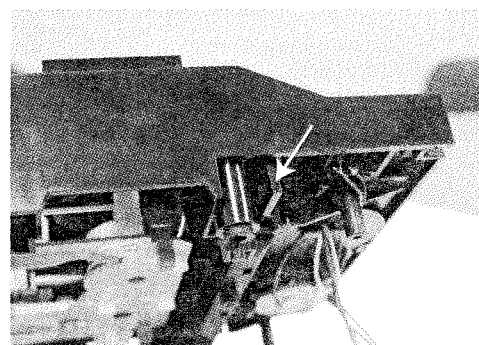
Front board 1002B
-> Remove connections
-> Remove 3 screws 100
-> Removes flex connections to Conn. 1113 and 1119
-> Dismount board

Manually opening of tray

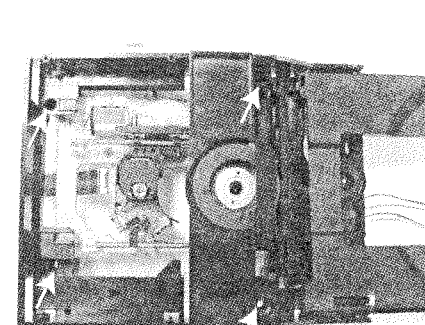
When it is not possible to open the tray with the EJECT button, the tray can manually be opened.
When no disc is loaded, unlock the tray by moving the slide from left to right and pull tray outwards.

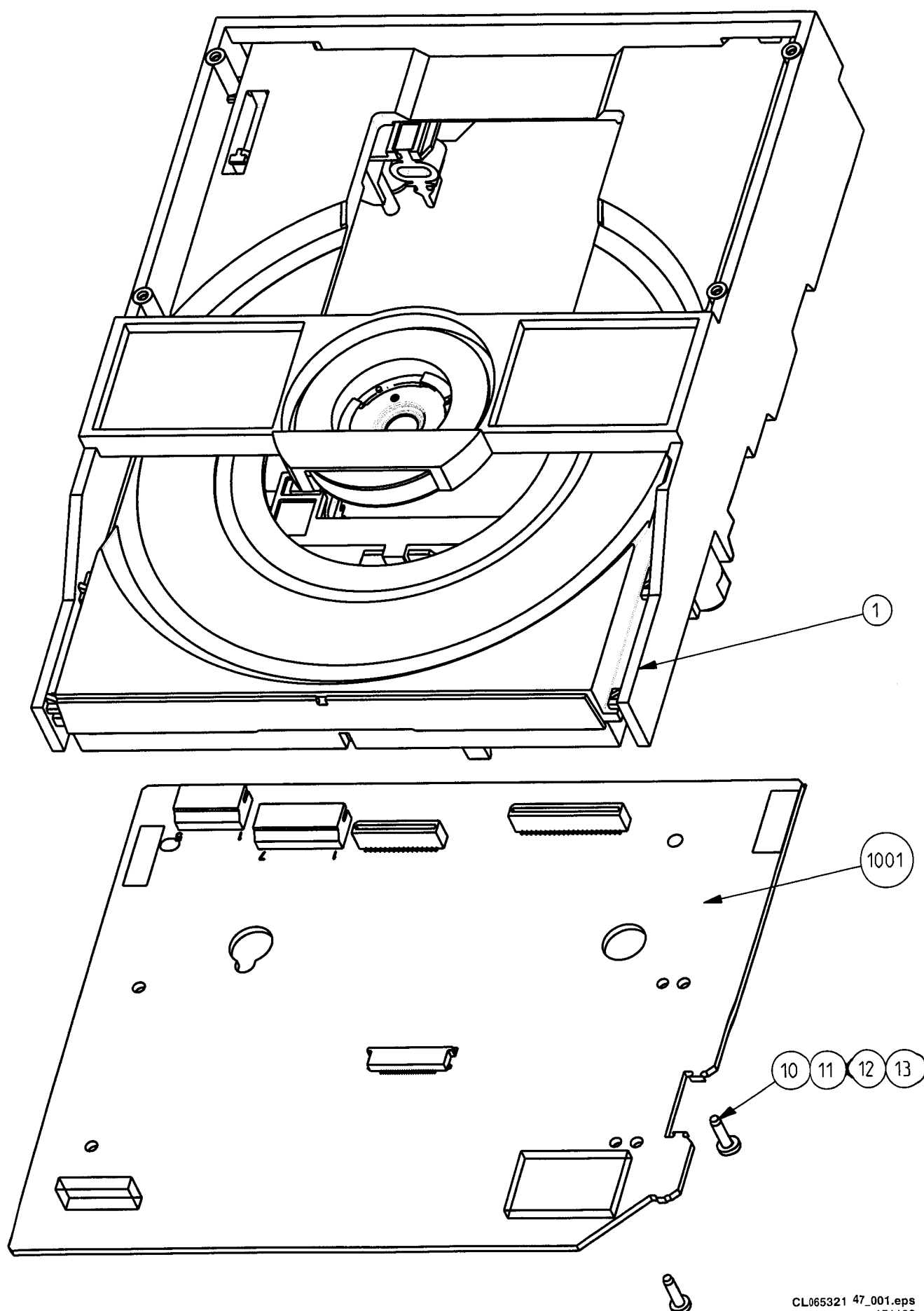


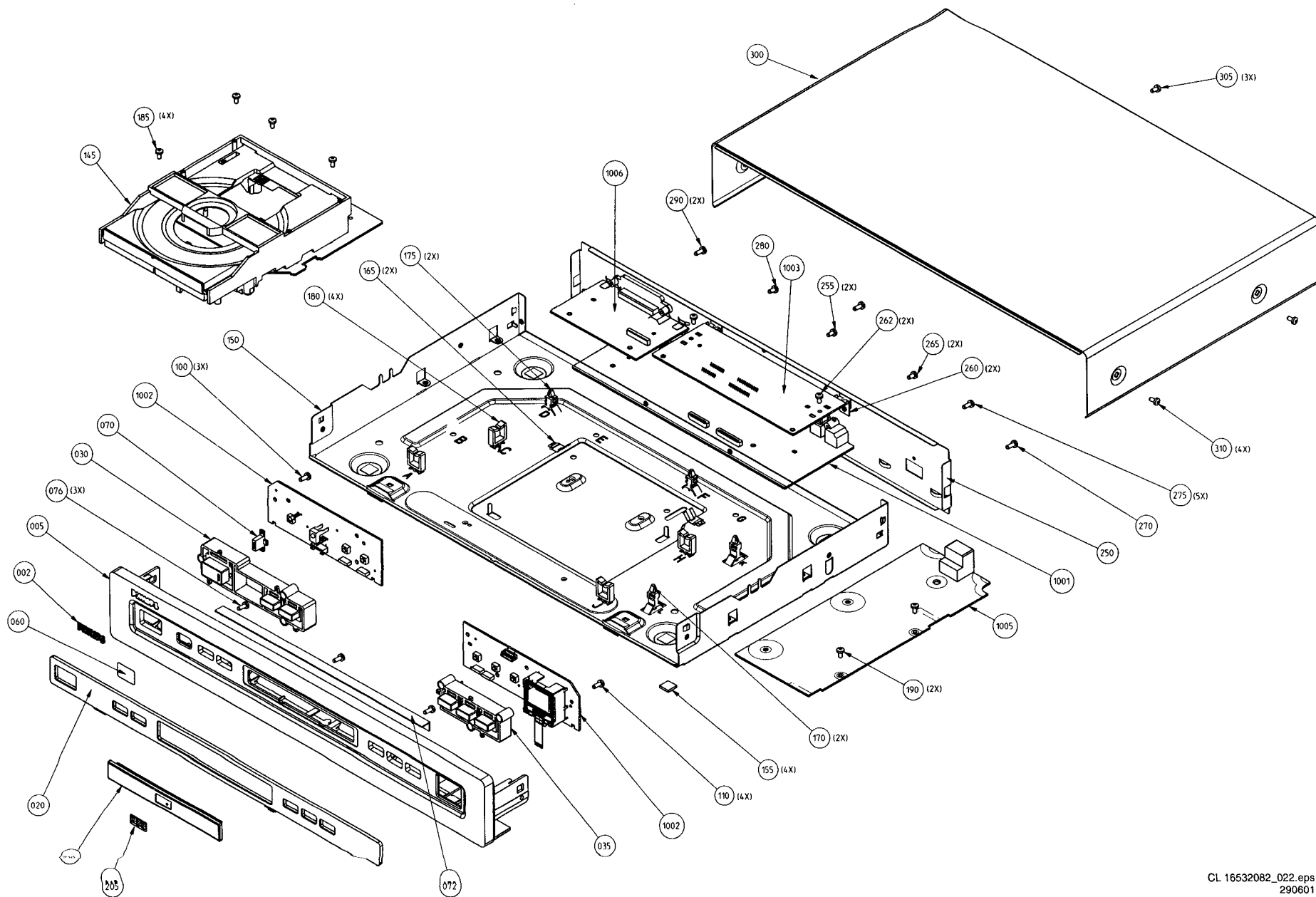
When a disc is loaded, unlock the tray by pushing the slide inwards with a screwdriver and pull tray outwards.



Remove 4 screws to remove loader.







4.3 Service Position

See figure 4-1 for the service position

1. Remove the cables from the cable tie housing.
2. Remove 4 screws that mount the DVD module to the bottom frame.
3. Move the DVD module backward slightly and flip the module over, so that the component side of the board faces upwards, and the module is in the service position.

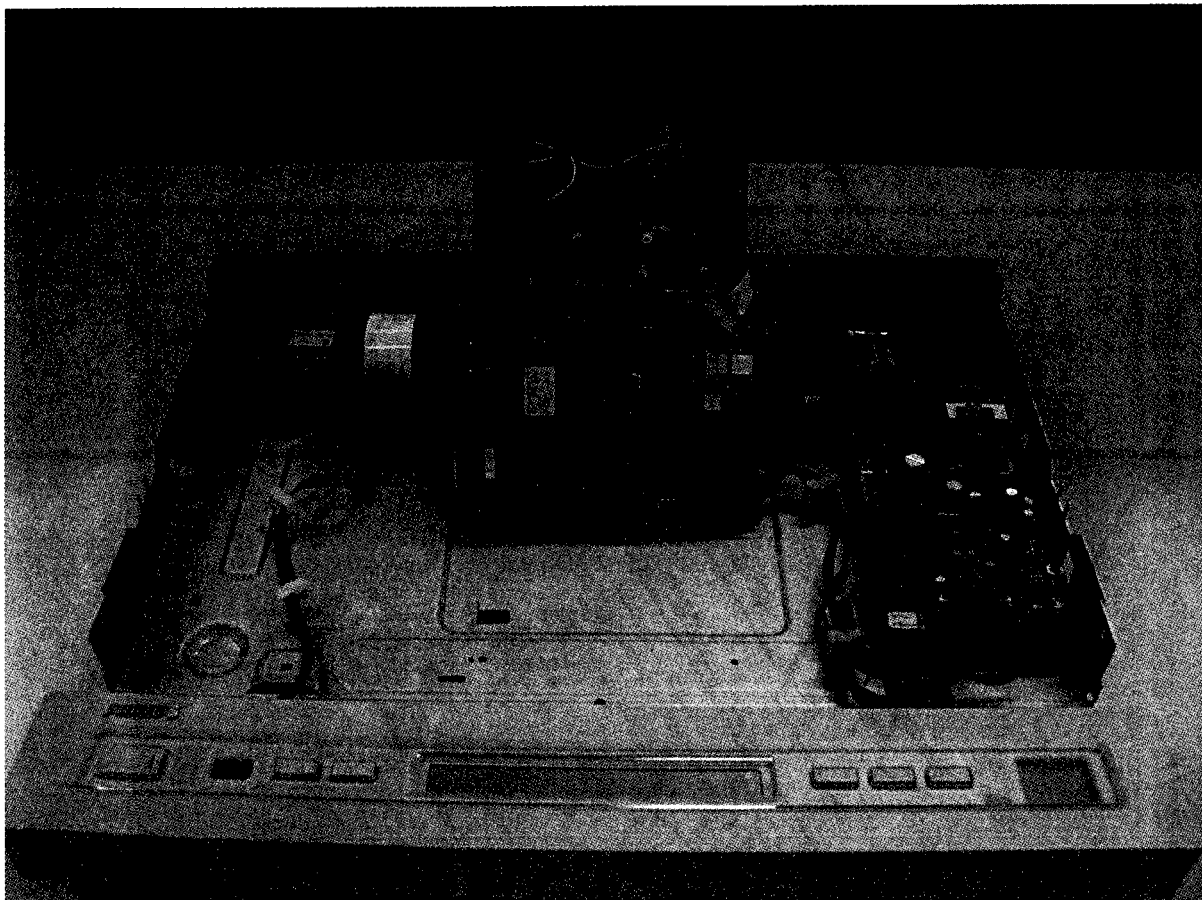


Figure 4-1

5. Diagnostic Software Descriptions And Troubleshooting

5.1 Dealerscript

5.1.2 Contents of Dealer Script

5.1.1 Purpose of Dealer Script

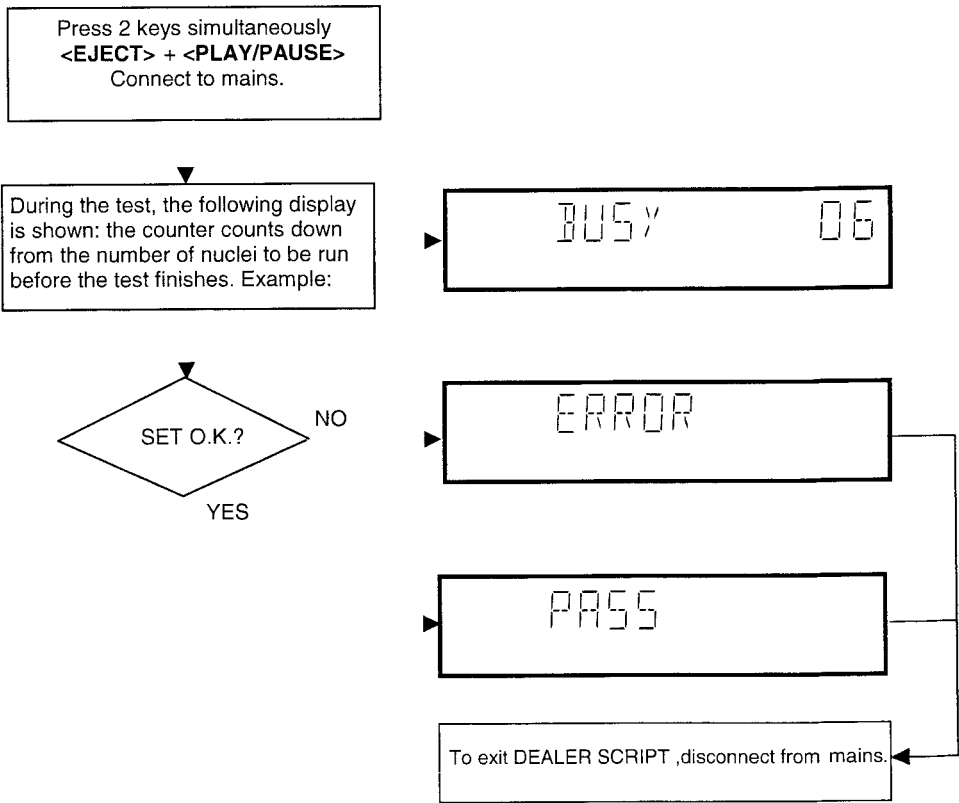
The dealer script can give a diagnosis on a standalone DVD player; no other equipment is needed to perform a number of hardware tests to check if the DVD player is faulty. The diagnosis is simply a "error" or "pass" message; no indication is given of faulty hardware modules. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

The dealer script executes all diagnostic nuclei that do not need any user interaction and are meaningful on a standalone DVD player.
The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

Nucleus		Description
PapChksFI	6	Calculate and verify checksum of FLASH memory.
PapI2cDisp	5	Checks the I2C interface with the slave processor on the display PCB.
PapS2bEcho	4	Checks the I2C interface to the basic engine.
PapI2cNvram	3	Checks the I2C interface with the NVRAM.
PapNvramWrR	2	Pattern test of all locations in the NVRAM
CompSdramWrR	1	Pattern test of all locations in the SDRAM(s).

CL'6532082_024.eps
290600

Figure 5-1



CL 16532082_037.eps
020701

Figure 5-2

5.2 Player Script

5.2.1 Purpose Of Player Script

The Player script will give the opportunity to perform a test that will determine which of the DVD player's modules are faulty, to read the error log and error bits and to perform an endurance loop test. To successfully perform the tests, the DVD player must be connected to a tv set to check the output of a number of nuclei. For DVDv2b a multi-channel amplifier, a set of 6 boxes and an external video source are necessary to test. To be able to check results of certain nuclei, the player script expects some interaction of the user (i.e. to approve a test picture or a test sound). Some nuclei (e.g. nuclei that test functionality of the Basic Engine module) require that the DVD player itself is opened, to enable the user to observe moving parts and approve their movement visually. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.2.2 Contents Of Player Script

The player script contains all nuclei that are useful on a DVD player that is connected to a tv-set and help to determine which module of the DVD player is faulty, as well as to read out the contents of the error logs.

5.2.3 Structure Of Player Script

The player script consists of a set of nuclei testing the three hardware modules in the DVD player: the Display PWB, the Digital PWB and the Basic Engine.

Nuclei run by the player test need some user interaction; in the next paragraph this interaction is described. The player test is done in two phases:

1. Interactive tests: this part of the player test depends strongly on user interaction and input to determine nucleus results and to progress through the full test. Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player.
2. The loop test will loop through the list of nuclei indefinitely, till the player is reset. The list of nuclei is as follows:
 - VideoScartSwComm
 - PapChksFlash
 - Papl2cNvram
 - CompSdramWrR
 - PapS2bEcho
 - Papl2cDisp

For DSW version 1.6 and above, the DSW version number will be displayed on the local display. Press PLAY/PAUSE to continue to the display test.

The display should look like the following:

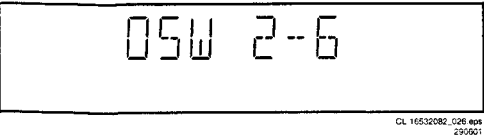


Figure 5-3

5.2.4 Survey

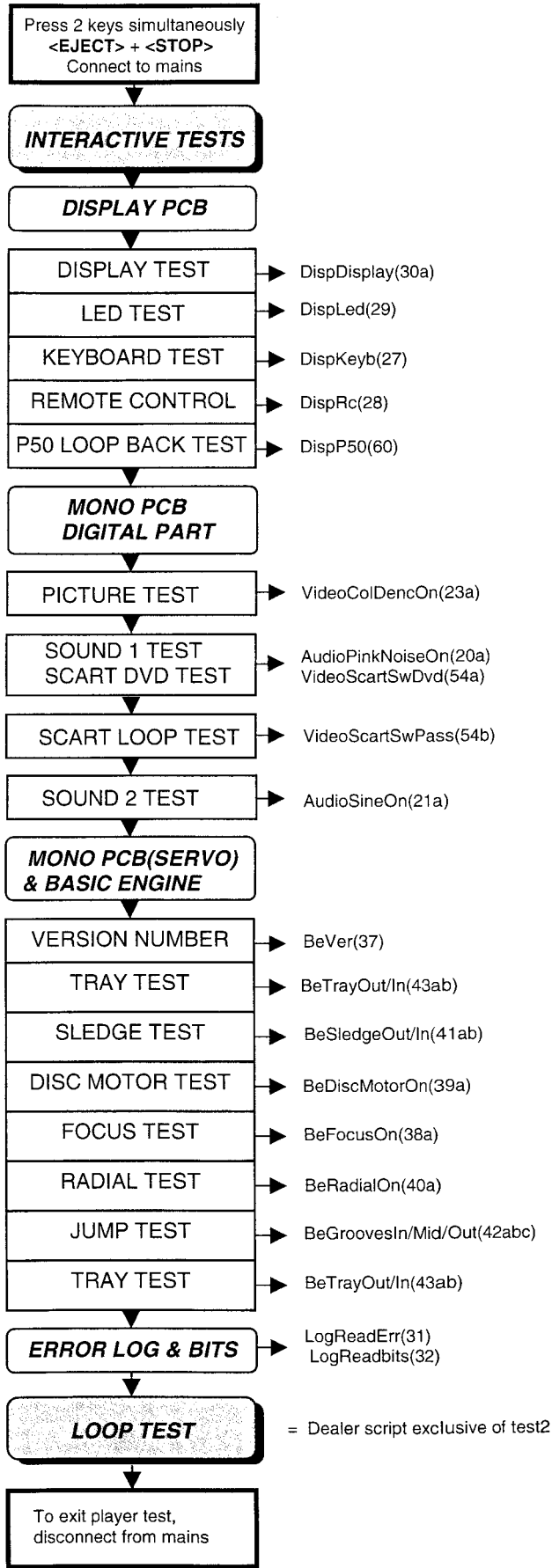


Figure 5-4

5.3 Display PCB

5.3.1 Display Test

The display test is performed by nucleus DispLCDDisplay. By putting a series of test patterns on the local display, the local display is tested. To step through all different patterns, the user must either press EJECT (pattern is ok) or STOP (pattern was incorrect) to proceed to the next pattern. The display of patterns is continued in a cyclic manner, shown in Fig. 5-5, until the user presses PLAY/PAUSE. If the user presses PLAY/PAUSE before all display patterns are tested, the DispLCDDisplay nucleus will return FALSE (display test unsuccessful).

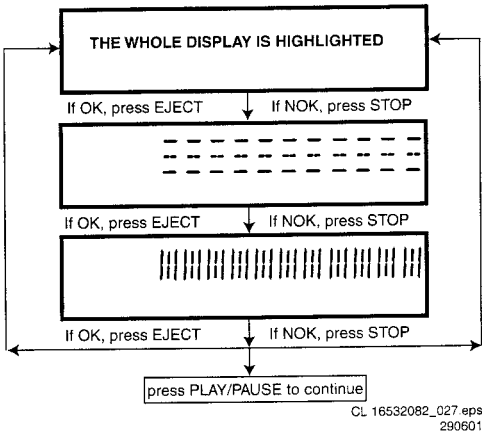


Figure 5-5

LCD Displays Backlight Test

The setting of the backlight brightness of the LCD display can be performed by the nucleus DispLCDBklight. To step through the 3 different brightness levels, the user either press EJECT (display is OK) or STOP (display is incorrect) to proceed to the next display. The display of the brightness levels is continued in a cyclic manner until the user presses PLAY/PAUSE. The brightness pattern is accompanied by a text on the LCD display to indicate its' current brightness level.

If the user presses PLAY/PAUSE before all display patterns are tested, the DispLCDBklight nucleus will return FALSE (display test unsuccessful)

5.3.2 LED Test

The LED(s) on the DVD player is (are) tested by nucleus DispLed. The user must check if the LED(s) is (are) lighted; if it is, press EJECT, if it is not, press STOP. By pressing PLAY/PAUSE the script will proceed to the next test. If the user presses PLAY/PAUSE before EJECT or STOP, the DispLed nucleus will return TRUE (LED test successful).

5.3.3 Keyboard Test

The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed. Example of the local display during this test:

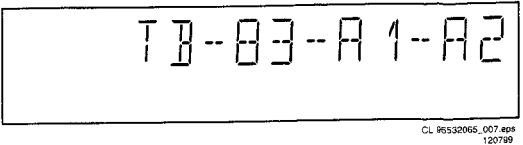


Figure 5-6

The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "tb-" will remain on display.

key id.	key
0	PLAY
1	NEXT
2	PREVIOUS
4	STOP
5	EJECT
J	STANDBY

CL16532082_028.eps
020701

Figure 5-7

If any keys are detected more than once (due to hardware error), the key-code is displayed twice (or more), with the second digit increased by 1.

If the user does not press all keys minimally once (in any order), the DispKeys nucleus will return FALSE and cause an error in the overall result of the player script.

The user can leave the keyboard test by pressing the PLAY/PAUSE key on the local display of the DVD player for at least one full second.

The result of the keyboard test is shown on local display as follows:

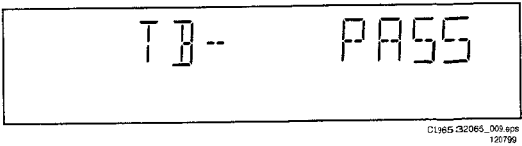


Figure 5-8

Or

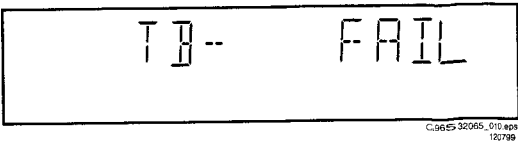


Figure 5-9

Pressing PLAY/PAUSE on the local keyboard a gain will proceed to the next text.

5.3.4 Remote Control Test

The remote control of the DVD player is tested by nucleus DispRc. The user must press any key on the remote control just once. The codes of the key pressed will be shown on the local display in hexadecimal format. Example:

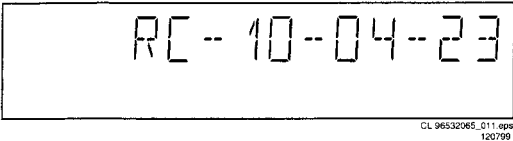


Figure 5-10

In this example 23 is the hexadecimal code of the pressed RC key. The user can leave the remote-control test by pressing PLAY/PAUSE on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the PLAY/PAUSE key; pressing the PLAY/PAUSE key before pressing a key on the remote control gives an error in the remote control test (note that the remote control test will also fail if a key on the remote control was pressed but no code was received). The remote control test does not check upon the contents of the received code, that is it will not be checked if the received code matches the key pressed. If desired, the user can manually check this code by using a code-table for the remote control key-codes.

C Key id	Hexadecimal code
STANDBY	0C
STOP	31
PLAY	2C
PLAY BACKWARD	2D
PAUSE	30
STEP FORWARD	F6
STEP BACKWARD	F5
FORWARD	28
FORWARD 4X	DF
FORWARD 8X	E0
BACKWARD	29
BACKWARD 4X	DE
BACKWARD 8X	DD
SLOW	22
SLOW 2	D9
SLOW BACKWARD	23
SLOW BACKWARD 2	DA
NEXT	20
PREVIOUS	21
CURSOR UP	58
CURSOR DOWN	59
CURSOR LEFT	5A
CURSOR RIGHT	5B
OK	5C
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
TOGGLE	C8
ANGLE	85
AUDIO	4E
SUBTITLES	4B
SUBTITLE ON/OFF	E3
ROOT MENU	54
TITLE MENU	71
MENU	D1
SETUP MENU	82
OSD ON/OFF	F
RETURN	83
RESUME	D7
SCAN	2A
SHUFFLE	1C
REPEAT	1D
A/B REPEAT	3B
TOGGLE SCART	43
OPEN/CLOSE	42
FTS	FB
KARAOKE	E4
OPTION	FA

Figure 5-11

After pressing PLAY/PAUSE, the result of the remote control test is displayed on the local display of the DVD player as follows:

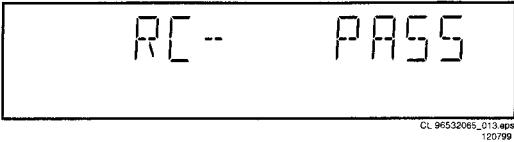


Figure 5-12

Or

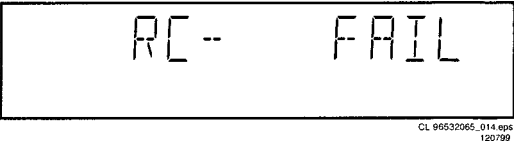


Figure 5-13

Pressing PLAY/PAUSE on the local keyboard again will proceed to the next test.

5.3.5 P50 Loop-Back Test

For the P50 loop-back test, the user must first press a key to decide if the test is to be performed. The display will show the following message:

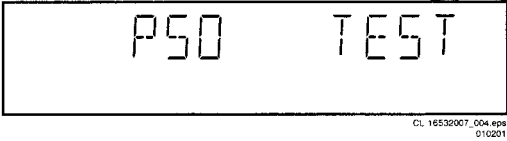


Figure 5-14

If the user presses STOP, the P50 test will be skipped. If the user presses EJECT, the P50 test is performed and the result is displayed as follows:

Test successful:

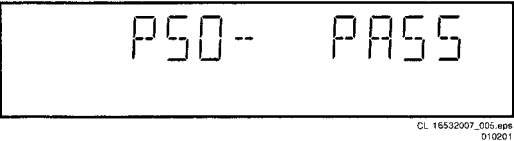


Figure 5-15

Test fails:

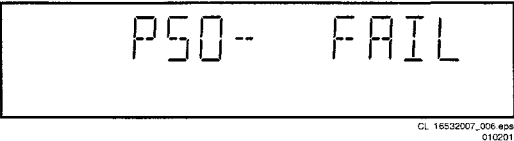


Figure 5-16

Press the PLAY/PAUSE key to continue to the next text

5.4 Mono PCB Digital Part

5.4.1 Picture Test

The picture test is performed by putting a predefined picture (colour bar) on the display (nucleus VideoColDencOn) and asking the user for confirmation. The display will show the following message:

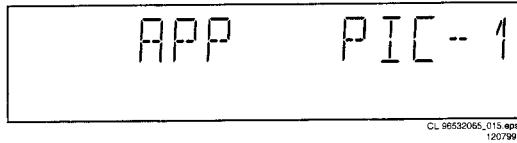


Figure 5-17

By pressing EJECT the user confirms the test, pressing STOP will indicate the picture was invisible or incorrect. Pressing PLAY/PAUSE will proceed to the next test

5.4.2 Sound 1 & SCART DVD Test

The first soundtest is performed by starting a pink noise sound that needs confirmation from the user (nucleus AudioPinkNoiseOn); the display will show the following message very shortly:

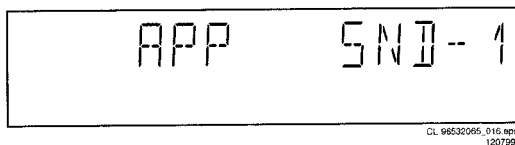


Figure 5-18

After starting up sound 1, SCART loop-trough will be simultaneously active during this test. SCART loop-trough will be measured with the aid of an external video source. When entering the SCART loop-trough, the local display indicates:



Figure 5-19

On the TV screen a colour bar (generated by nucleus VideoColDencOn) is visual and the internally generated pinknoise is audible. By pressing EJECT the user confirms the test, pressing STOP will indicate the sound was inaudible or incorrect. Pressing PLAY/PAUSE will proceed to the next test; if the user presses PLAY/PAUSE without pressing EJECT or STOP first, the result of this test will be TRUE (sound ok). By pressing the PLAY/PAUSE button there will be switched over to the external source, this must become now visible on the TV screen (using the SCART). The local display indicates:



Figure 5-20

The internally generated colour bar is still available on the CVBS and Y/C outputs. And the pinknoise-signal is still available on the cinch audio outputs. By pressing the EJECT button, the internal generated colour bar becomes visual again.

The test can be exited by pressing the PLAY/PAUSE key for more than one second.

5.4.3 Sound 2 Test

The second sound test is performed by producing a sine audio output (nucleus AudioSineOn). The signal can be stopped by pressing the STOP-key. The display will show the following message:

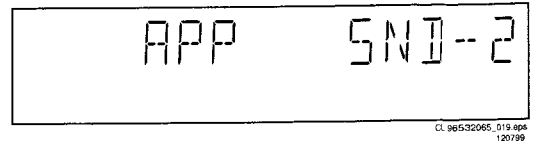


Figure 5-21

By pressing EJECT the user confirms the test, pressing STOP will indicate that something went wrong. Pressing PLAY/PAUSE will proceed to the next; if the user presses PLAY/PAUSE without pressing EJECT or STOP first, the result of this test will be TRUE (sound ok).

5.5 Basic Engine

5.5.1 Version Number

In the basic engine tests, the version number of the Basic Engine will be shown first, as the following example:

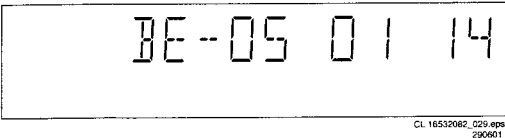


Figure 5-22

By pressing the PLAY/PAUSE key, the Basic Engine tests are started.

5.5.2 Tray Test

First, the tray is tested. The purpose of this test is also to give the user the opportunity to put a disc in the tray of the DVD player. Some tests on the Basic Engine require that a disc(e.g. DVD MPTD test disc) is present in the player. At the end of the Basic Engine tests this tray test will be repeated solely to enable the user to remove the disc in the tray. The local display will look as follows:

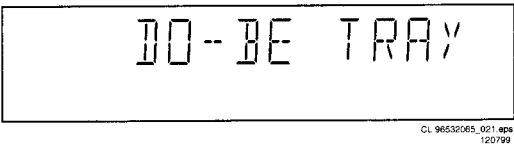


Figure 5-23

By pressing EJECT or STOP the user can toggle the position of the tray. Note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY/PAUSE will proceed to the next test, after the tray has been closed (by the software) if it was open.

5.5.3 Sledge Test (Visual Test)

The second Basic Engine test tests the sledge; the user can move the sledge as many times as desired by using EJECT (nucleus BeSledgeOut) and STOP (nucleus BeSledgeIn). Pressing PLAY/PAUSE on the local keyboard proceeds to the next test. Note that this test will not contribute to the test result of the Basic Engine. The local display will look as follows during the sledge test:

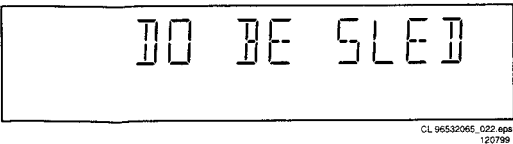


Figure 5-24

5.5.4 Disc Motor Test (Visual Test)

The third Basic Engine test tests the disc motor (nucleus BeDiscMotorOn); the local display looks as follows:

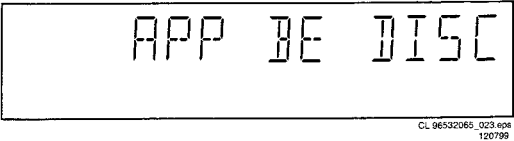


Figure 5-25

By pressing EJECT the user confirms that the disc motor is running; pressing STOP indicates the disc motor does not work. Pressing PLAY/PAUSE proceeds to the next test, after a reset of the disc motor (nucleus BeDiscMotorOff). If the user presses PLAY/PAUSE before pressing EJECT or STOP, the result of this test will be TRUE (disc motor is running).

5.5.5 Focus Test (Visual Test)

The fourth Basic Engine test tests the focussing; first focussing is turned on by calling nucleus BeFocusOn. The display will look as follows:

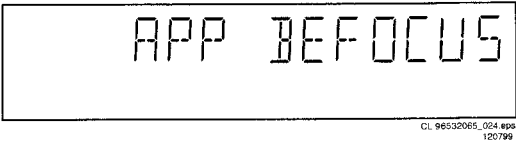


Figure 5-26

By pressing EJECT the user confirms that the focussing was succesful; pressing STOP indicates a focussing failure. Pressing PLAY/PAUSE proceeds to the next test after a reset of the focussing (nucleus BeFocusOff); if PLAY/PAUSE is pressed before EJECT or STOP, the result of this test will be TRUE (focus successful).

5.5.6 Radial Test (Visual & Listening Test)

The fifth Basic Engine test tests the radial functionality (nucleus BeRadialOn); the local display looks as follows:

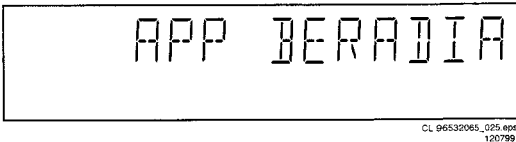


Figure 5-27

By pressing EJECT the user confirms that the radial function worked; pressing STOP indicates the function does not work. Pressing PLAY/PAUSE proceeds to the next test, after a reset of the radial (nucleus BeRadialOff). If the user presses PLAY/PAUSE before pressing EJECT or STOP, the result of this test will be TRUE (radial successful).

5.5.7 Jump Test (Listening Test)

The sixth and last Basic Engine test tests the jumping by calling nuclei BeGroovesIn, BeGroovesMid and BeGroovesOut. During this test, the local display looks as follows:

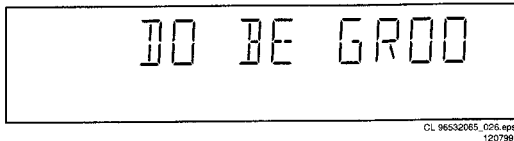


Figure 5-28

The user can switch between the three different types of groove settings by pressing EJECT (forward to next nucleus in the list In-Mid-Out) or STOP (backward in the list In-Mid-Out). This is done in a cyclic manner; note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY/PAUSE proceeds to the next test, after the disc motor has been shut off with a call to nucleus BeDiscMotorOff.

5.5.8 Tray Test

As a last action for the Basic Engine tests, the tray test is repeated. The local display will look as follows:

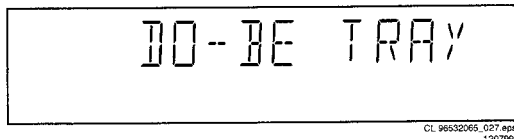


Figure 5-29

This test is meant to give the user the opportunity to remove the disc in the tray. The tray position can be toggled using the EJECT and STOP key. The tray will be closed (by the software, if it is open) before proceeding to the next test when the user presses the PLAY/PAUSE key.

5.5.9 Error Log (See Table On the Next Page)

Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player. Reading the error log is done by nucleus LogReadErr. The display during the errorlog readout looks as follows :

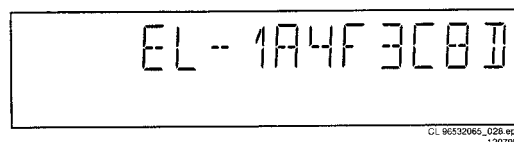


Figure 5-30

By pressing EJECT or STOP the user can move forward or backward (respectively) through the logged error codes. The highlighted number indicates which errorcode is currently on display (in the example above, errorcode number 4 is displayed). If "0000" is displayed at all positions, the error log is empty. Display of the logged errors is done in a cyclic manner. The errorcode with the lowest highlighted number is the most recent. By pressing PLAY/PAUSE on the local keyboard, the user can proceed to the next test.

5.5.10 Error Bits (See Table On the next page)

Reading the error bits is done by nucleus LogReadBits. The display during the errorbits readout looks as follows:

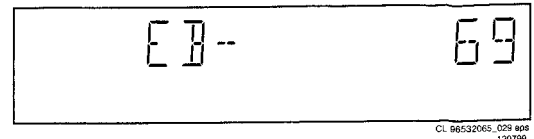


Figure 5-31

Only the set errorbits will be shown by their (decimal) number. Refer to the appropriate documentation for the explanation of each bit number. If the display only shows "EB-0", no error bits were set. By pressing PLAY/PAUSE the user can continue to the next test.

5.6 Loop Test (See Table Below)

At the start of the loop test, the display will show the result of the interactive player test:

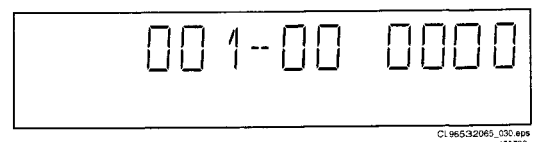


Figure 5-32

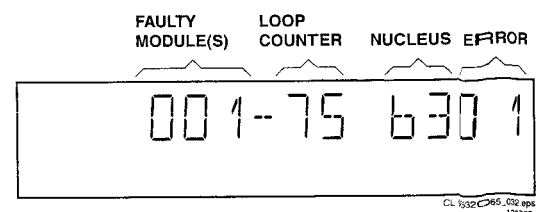
The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values are to be interpreted as follows:

Displayed Value	Indication for each module		
	Basic Engine	Mono PCB	Display PCB
000	ok	ok	ok
001	ok	ok	faulty
010	ok	faulty	ok
011	ok	faulty	faulty
100	faulty	ok	ok
101	faulty	ok	faulty
110	faulty	faulty	ok
111	faulty	faulty	faulty

CL 96532065_031.eps
120799

Figure 5-33

The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely. The display of the DVD player will display not only the three digits indicating correct/faulty modules and the last bound error code (as mentioned, faults are detected as far as they can be within the scope of the diagnostic software), but also a loop counter indicating how many times the loop has been gone through. Example:



CL 96532065_032.eps
120799

Figure 5-34

The number after the hyphen indicates the number of times the loop test has been performed; the 4 digits at the right side of the display show the last error that was found when running the loop test: the leftmost two digits of this code

indicate which nucleus resulted in a fault; the rightmost two digits refer to the faultcode within that nucleus. For further explanation of this error code, see list of error codes below.

ERROR CODES LOOP TEST

ERROR CODE	NUCLEUS NUMBER	ERROR DESCRIPTION
0601	6	Calculated checksum of FLASH is not correct
1101	11	I2C bus busy before start
1102		NVRAM access time-out
1103		No NVRAM Acknowledge
1104		NVRAM reply time-out
1201	12	I2C bus busy
1202		I2C bus not working
1203		Slave controller not responding
1204		Slave response is not correct
1301	13	Parity error from basic engine to serial
1302		Parity error from serial to basic engine
1303		No communication between serial and basic engine
1304		Communication time-out error
1601	16	The SDRAM is faulty
5201	52	I2C bus busy
5202		Error sending I2C command to COLOR SETUP IC
5203		Colour setup IC not responding
5204		Colour setup IC response is not correct
5401	54	I2C bus busy
5402		Error sending I2C command to SCART SWITCH IC
5403		SCART Switch is not responding
5403		SCART Switch response is not correct

CL06532096_006.eps
050700

Figure 5-35

Error log / bits table	Read ERROR LOG in player script	Read ERROR BITS in player script
Basic engine errors	Value:	Value:
Command to the Basic Engine not allowed in this state or unknown command	150101	8
Parameter(s) from the command to the Basic Engine is not valid	150102	7
Sledge could not be moved to the inner home position	150103	6
Focus failure	150104	5
Turntable motor speed could not be reached within timeout	150105	4
Radial servo could not get on track on the disc	150106	3
PLL could not lock in the accessing or tracking state	150107	2
Subcode or sector information could not be read	150108	1
requested subcode could not be found	150109	16
Tray could not be closed or opened completely	15010A	15
TOC could not be read within timeout	15010B	14
The requested seek on the disc could not be executed	15010C	13
A requested lead-in is not on the disc	15010D	12
A non existing burst cutting area is requested	15010E	11
S2b communication error	1501F0	10
S2b communication error	1501F1	9
S2b communication error	1501F3	24
S2b communication error	1501F4	23
S2b communication error	1501F5	22
Digital PWB errors		
Communication error with the Sti 5505	90000	32
Communication error with the Sti 5505	90001	31
Disply processor errors		
Communication error with the display processor	190000	40

5.6.1 Servicing DVD Loader

The DVD Loader / mechanism, VAL6011, has to be exchanged completely in case of failure. A new mechanism can be ordered with codenumber 9305 023 61101.

5.6.2 Reprogramming Of New Mono Boards.

Caution

This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono board.

After reset of NV-memory or repair of the mono board, all the customer settings and also the region code will be lost.

Reprogramming of the mono board will put the player back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.

Reprogramming is limited to 25 times

When the counter reaches 25, reprogramming is not possible anymore

Reprogramming will be done by way of the remote control.

Put the player in stop mode, no disc loaded.

Press the following keys on the remote control:

<PLAY> followed by numerical keys <1> <5> <9>

The display shows: "-----"

Press now successively the following keys :

for DVDQ40 /001 /021 /051 : <0><6><1> <0><0><0><0><0><0><0><0>

for DVDQ50 /001 /021 /051 : <0><6><8> <0><0><0><0><0><0><0><0>

Press <PLAY> again.

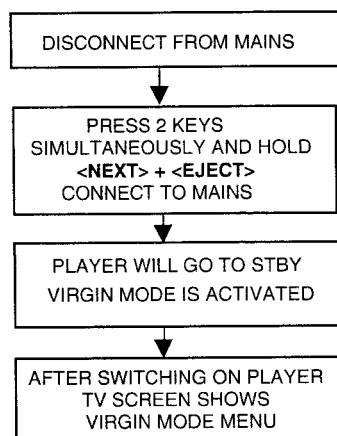
The TV screen will become BLUE during a short time to confirm that the mono board has been reprogrammed.

CL 16532082_030.eps
290601

Figure 5-36

5.6.3 Reset Of Virgin Mode

After the player has been powered up for test by the dealer, it would have gone through the Virgin Mode. It is possible to reset the settings made during that mode before the delivery of player to the customer. This can be done as shown in the following diagram:

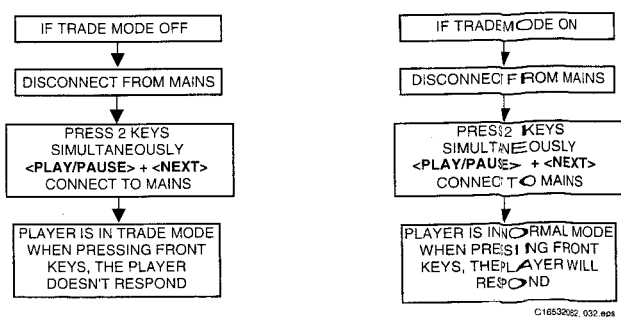


CL 16532082_031.eps
130701

Figure 5-37

TRADE MODE

When the player is in Trade Mode, the player cannot be controlled by means of the front key buttons, but only by means of the remote control.



C16532082_032.eps
290601

Figure 5-38

5.7 Test Instruction Audio/Video Board

These test instructions can be used for all versions of the A/V board which has the following outputs:

- Audio L/R
- 5.1 Audio output
- Subwoofer output
- Optical / Coaxial digital output
- CVBS
- Y/G_vid,U/B_vid,V/R_vid output
- S-video
- Scart output

5.7.1 General

- All the waveforms measurement carried out in these test instruction will be base on the testpoint indicated in the A/V board schematic diagram in the Service manual.
- Impedance of the measuring-equipment should be > 1M Ω
- Most of the tests can be done using either the Diagnostic software "Player script" which can be found in the chapter "Diagnostic Software description and troubleshooting" or the Menu interface using the Service PC with a terminal emulation program (e.g. Window Hyperterminal) where it is possible to control the execution of the Diagnostic Nuclei
- Setup for the measurement will be done in set level with all modules connected as shown in the Wiring Block diagram.

5.7.2 General Start-Up Measurement

Supply check:

Before starting the measurement,ensure that all power supply are connected to the A/V board.

Pin nbr	Supply
1101-9	-5V (-Vcc)
1101-10	+5V
1101-11	+5V

The supply currents can be measured using a Tektronics AM503B current probe or equivalent.

Supply	Power consumption (AVG)
+5VA	+5V 3% I = 200mA
+5Vvid	+5V 3% I = 200mA
-5V	-5V 3% I = 200mA

Clock Check

Ensure the present of the clock to the DAC

Clock Name	Testpoint	Frequency
PCM_CLK	TP10	11.2896MHz 0.02% tolerance

Audio mute check

Measure the Audio mute voltage input at pin 12 of connector 1101

Status	Value
AudioMuteOn	4.7V 10%
AudioMuteOff	-8V 10%

To toggle between ON and OFF,use the following commands:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off

5.7.3 Audio DAC And Amplifier

Ensure that the Audio mute signal is OFF

To check the DAC and buffer amplifier,send the following commands:

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sine signal ON	Sine,1Khz on stereo
----	Press stop button	Audio Sine signal OFF	No waveform
20a	AudioPinkNoiseOn	Audio Pinknoise ON	Pink Noise on 6 channels
20b	AudioPinkNoiseOff	Audio Pinknoise OFF	No waveform

The audio signal (sine or pink noise) will also be present on the digital output (SPDIF).This can be checked by connecting digital signal to an amplifier with digital input. Check the I2S and audio signal at the following testpoints:

Name	Testpoint
LRCLK	TP8
SCLK	TP9
PCM_CLK	P10
PCM_OUT0	TP7
PCM_OUT1	TP27
PCM_OUT2	TP28
SPDIF	TP11
Front L/R out-Audio cinch	TP13
H/P L/R out	TP20
Analog out -Audio cinch	TP25

All waveforms can be refer to the waveform diagram in the chapter "Diagnostic software description and troubleshooting".

5.7.4 Video Output And Buffer Amplifier

Check DC output-level at all video cinch output : 1.0V DC \pm 10%

Generate a color bar using the following software commands:

Ref.#	Command Name	Remarks
23a	VideoColDencOn	Colour DENC ON
61a	VideoColOutRGB	RGB Colourbar
61b	VideoColOutYUV	YUV Colourbar
23b	VideoColDencOff	Colourbar DENC OFF

Check the video outputs at the following testpoints:

Name	Testpoint
B_VID	TP1
G_VID	TP2
R_VID	TP3
CVBS out	TP14
S-Video-C out	TP15
S-Video-Y out	TP16
Y out	TP17
U out	TP18
V out	TP19

All waveforms can be refer to the waveform diagram in the chapter "Diagnostic Software description and troubleshooting".

5.7.5 Play And 16/9 Detection

Check DC voltage at S-Video-chroma output (pin 4) with a 6K8 ohm load and Scart connector (pin 8) and change the 0/6/12 input (1101-8) using the following commands:

Ref.#	Command Name	Remarks	Chroma output
25a	VideoScartLo	Sends out 0V 0.5V	<0.1V
25b	VideoScartMi	Sends out 6V 10%	2.0V 10% with load
			5.0V 10% without load
25c	VideoScartHi	Sends out 12V 10%	<0.1V

5.7.6 Kill Circuit

To check the functionality of the Kill circuitry, the audio outputs has to be present by the following command:

Ref.#	Command Name	Remarks	Audio output
21a	AudioPinkNoiseOn	Audio Pinknoise ON	Pink Noise on 6 channels

Check the audio outputs at the audio cinch of the A/V board
: Pink Noise

Activate the Kill circuit by using the following command:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On

Check the audio outputs at the audio cinch of the A/V board
: No waveform

Switch off the kill circuit by using the following command:

Ref.#	Command Name	Remarks
19b	AudioMuteOff	Audio Mute Off

Check the audio outputs at the audio cinch of the A/V board
: Pink Noise

5.8 Test Instructions Display Board

5.8.1 Introduction

These test instructions are written for all versions of the display PCBAS.
The contents of the PCB can be split up into next blocks:

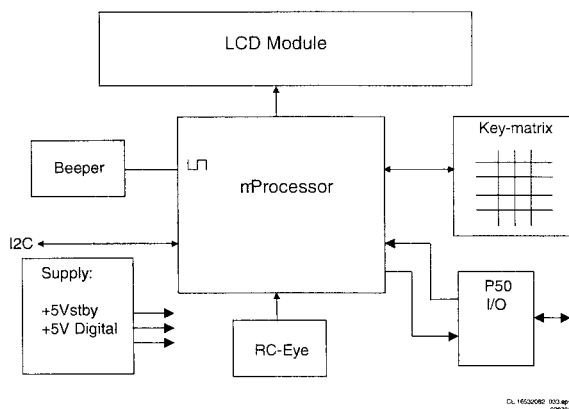


Figure 5-39

5.8.2 Functionality Description:

The essential component of the display PCB is the μ P (slave). This slave works on an 8MHz resonator and has a reset circuit that is triggered by the +5Vstby. After the reset pulse, the standby control line will release the reset of the host μ P. This host μ P will then initialise the slave. In addition, when going to stand-by, the slave will put the host μ P in reset. When the slave receives the right IR or key code to leave the standby mode, the reset of the host μ P will be released. Other slave functions is:

- Has inputs for RC (RC5 and RC6) and P50 (P50 controller is built in).

5.8.3 General

- Oscilloscope measurements have been carried out using a Philips PM3392A.
- Impedance of measuring-equipment should be $> 1M\Omega$.
- To do correct measurements we recommend to use supply 3122 427 22930.

5.8.4 Reset

Check next reset timing with an oscilloscope at pin 4 of the microprocessor.

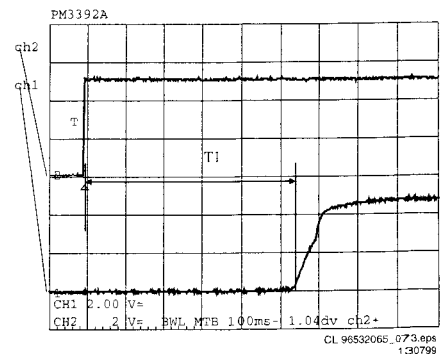


Figure 5-40

Timing: $400\text{msec} < T1 < 700\text{msec}$.
CH1: +5Vstby voltage at power on.
CH2: Voltage at pin 4.

5.8.5 Key-matrix

Connect an extra 10k Ω pull-up to pin 43 and 44 of the μ P and check next matrix scanning at these pins.

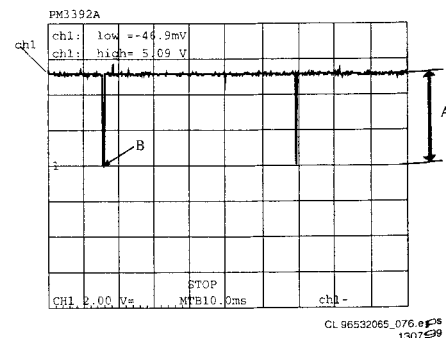


Figure 5-41

Level A: $5.0V \pm 7\%$
Level B: $0V \pm 200\text{mV}$
Check matrix scanning from pin 33 until 44 of the μ P.
The results should be the same as the diagram above.

5.8.6 I.R. Receiver

Check at pin 29 of the μ P if this line switches from low ($< 0.3V$) to high ($> 4.5V$), while pressing a key on a Philips RC5 or RC6 remote control.

5.8.7 Standby LED

In operating mode:

Check the voltage at the base of transistor 7109:
 $4V \pm 10\%$ (LED is OFF)

In standby mode:

Voltage at anode of LED 6200 is $3V3 \pm 15\%$
 Check to ensure that the LED is ON

5.8.8 P50 Interface

P50 is a bi-directional serial interface, which is used for communication between video equipment. For European sets, this communication goes via pin 10 of the scart-bus. In other regions, it can be a cinch bus at the back of the set.

1. Keep the μ P in reset by short-circuiting emitter and collector of transistor 7108, via resistor 3100 and 3104 transistor 7101 is switched on.
2. Check the voltage at the P50 output connector 1118-5: $< 200mV$.

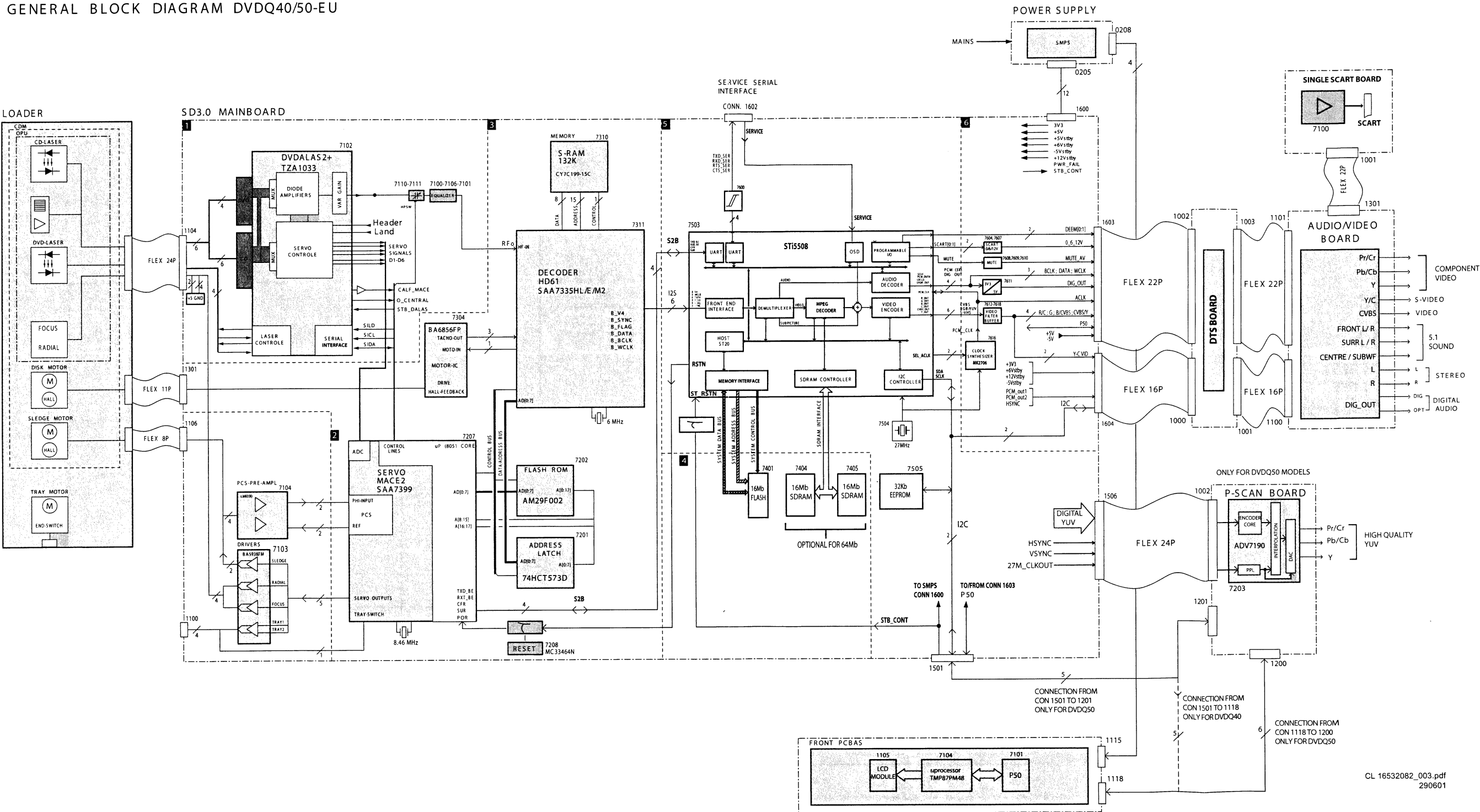
When the reset is released the μ P output-pin becomes low and transistor 7101 is switched off.

1. Check the voltage at the P50 output connector 1118-5: $4V9 \pm 5\%$.
2. Check also the μ P P50 input (μ P pin 20): $5V \pm 5\%$.
3. Connect the P50 line (connector 1118-5) to ground.
4. Check again the μ P P50 input (μ P pin 20): $< 0V3$.

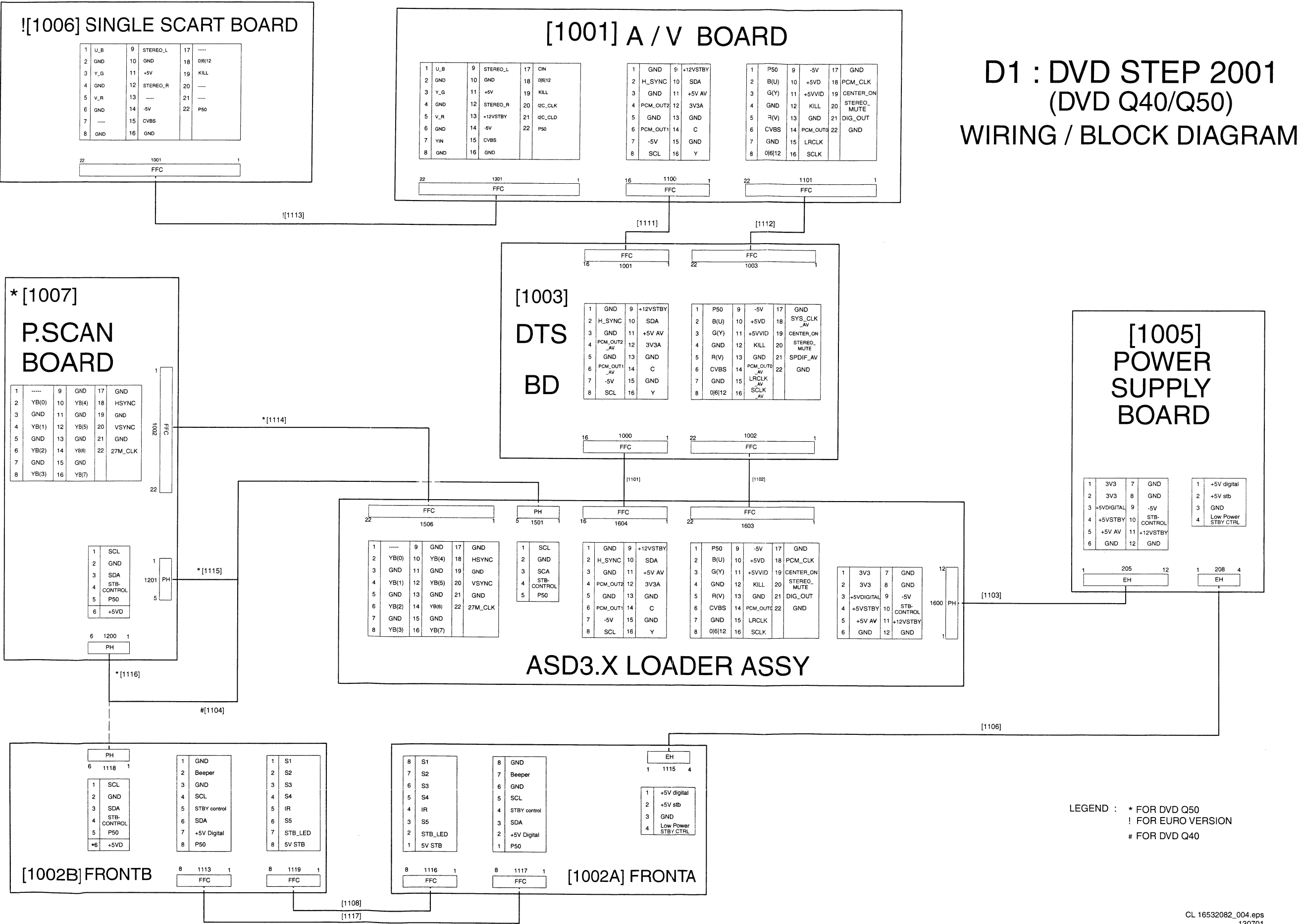
6. Block and Wiring Diagram.

Blockdiagram DVD Q40-50 /0X1

GENERAL BLOCK DIAGRAM DVDQ40/50-EU



Wiring Diagram

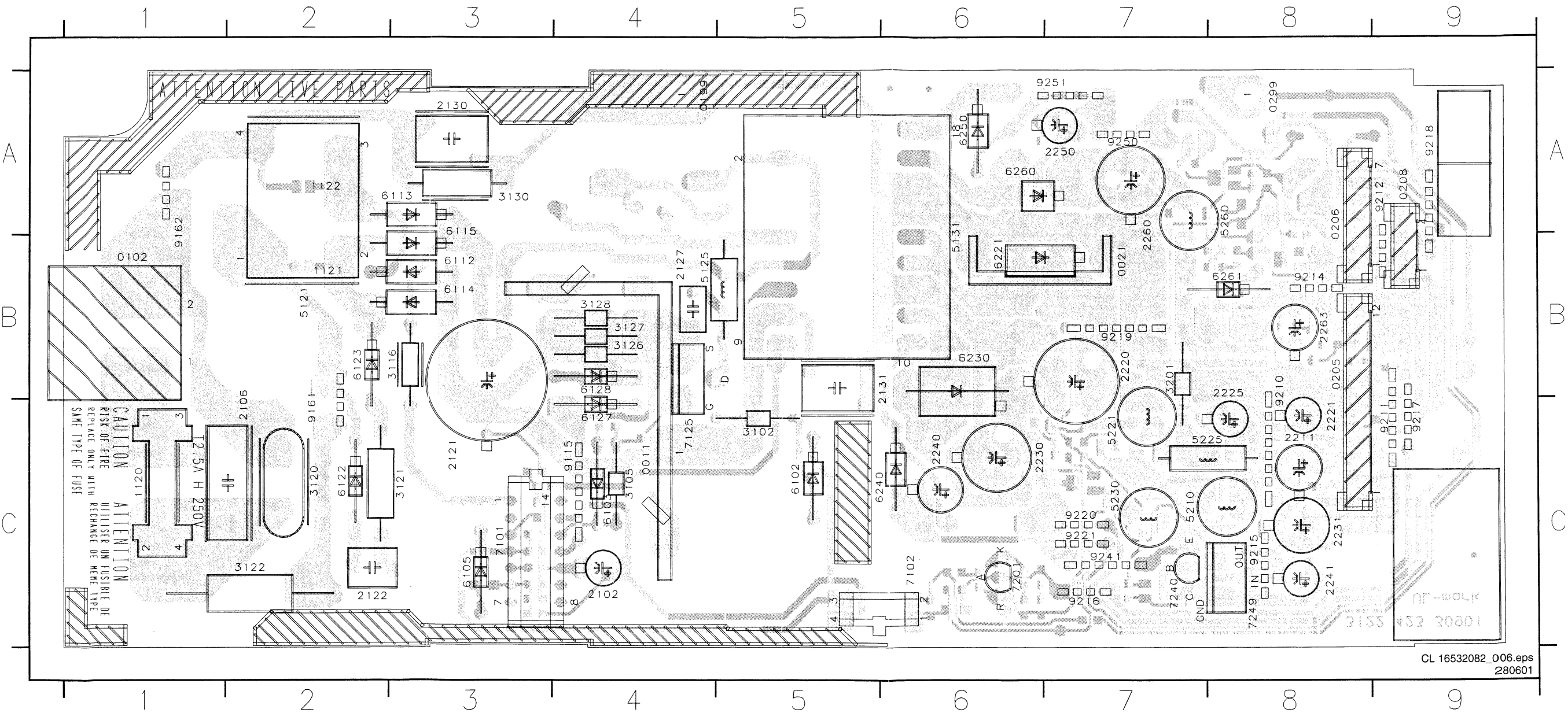


LEGEND : * FOR DVD Q50
! FOR EURO VERSION
FOR DVD Q40

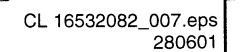
CL 16532082_005.eps
130701

Layout Power Supply STEP 2001 EURO (Top View)

0011	C4	0208	A9	2121	C3	2220	B7	2241	C8	2272	C7	3120	C2	3201	B7	5131	B6	5230	C7	6111	A4	6127	C4	6250	A6	7125	C4	9115	C4	9214	B8	9221	C7
0021	B7	0299	A8	2122	C2	2221	C8	2250	A7	3102	C5	3121	C3	3251	A7	5161	B2	5241	C7	6112	B3	6128	B4	6260	A6	7201	C6	9122	C2	9215	C8	9241	C7
0101	B1	1120	C1	2127	B4	2222	B6	2251	A8	3105	C4	3122	C2	3261	A8	5162	A1	5250	A7	6113	A3	6220	B6	6261	B8	7204	B8	9161	C2	9216	C7	9250	A7
0102	B1	2102	C4	2130	A3	2225	B8	2252	A6	3106	A2	3126	B4	3267	A8	5210	C7	5260	A8	6114	B3	6221	B6	6270	C6	7240	C7	9162	A1	9217	C9	9251	A7
0199	A4	2106	C2	2131	B6	2230	C6	2260	B7	3111	A4	3127	B4	3271	C9	5220	C7	6102	C5	6115	A3	6230	B6	6271	B9	7249	C8	9210	B8	9218	A9	9261	B8
0205	B8	2109	B4	2211	C8	2231	C8	2262	A7	3115	C4	3128	B4	5121	B2	5221	C7	6103	C4	6122	C2	6240	C5	7101	C3	7250	A7	9211	C9	9219	B7		
0206	A8	2111	A5	2219	C7	2240	C6	2263	B8	3116	B3	3130	A3	5125	B4	5225	C7	6105	C3	6123	B2	6241	C5	7102	C6	7261	B8	9212	A9	9220	C7		

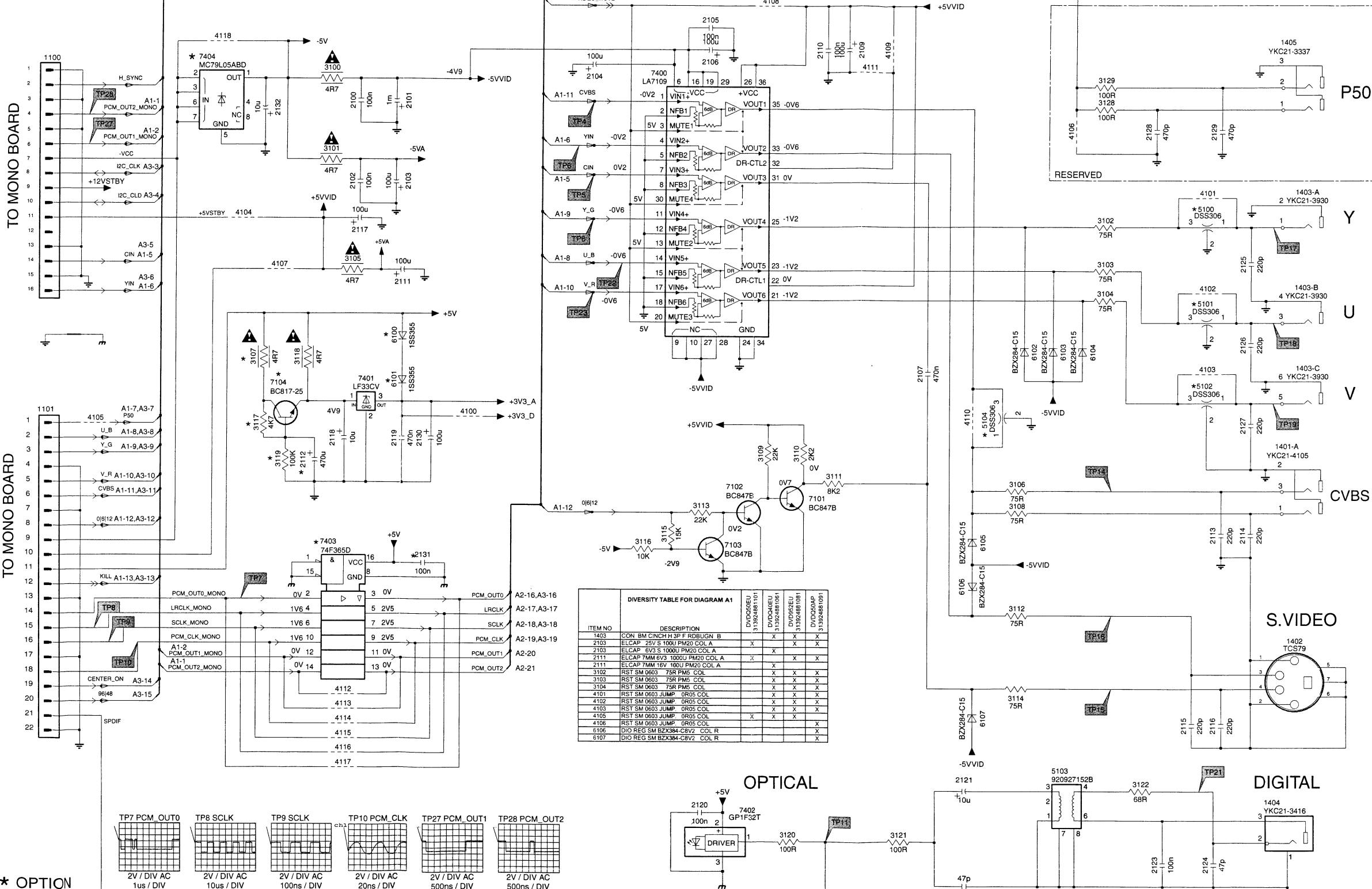


2107	A3	2201	A6	2223	A9	2265	B8	3108	A3	3125	A4	3205	A6	3209	A7	3241	A7	3252	C8	3262	B8	3266	B8	6202	A6	7241	A7	7264	B8
2108	A3	2202	A6	2242	A8	2299	C9	3110	A3	3202	A7	3206	A6	3220	A7	3242	A7	3253	C7	3263	B8	3276	C7	6262	C8	7251	C8	92022	C5
2110	A3	2203	A6	2261	B8	3103	A3	3112	A3	3203	A7	3207	A6	3230	A7	3243	A7	3254	C8	3264	B8	6106	A3	7221	A7	7262	C8		
2113	A3	2212	A8	2264	B8	3104	A4	3113	A3	3204	A6	3208	A6	3231	A7	3250	C7	3260	C7	3265	B8	6201	A6	7231	A7	7263	B8		



A/V Board (Video)

A1 AV_VIDEO



* OPTION

V DC vtg measured in STOP-MODE

OPTICAL

DIGITAL

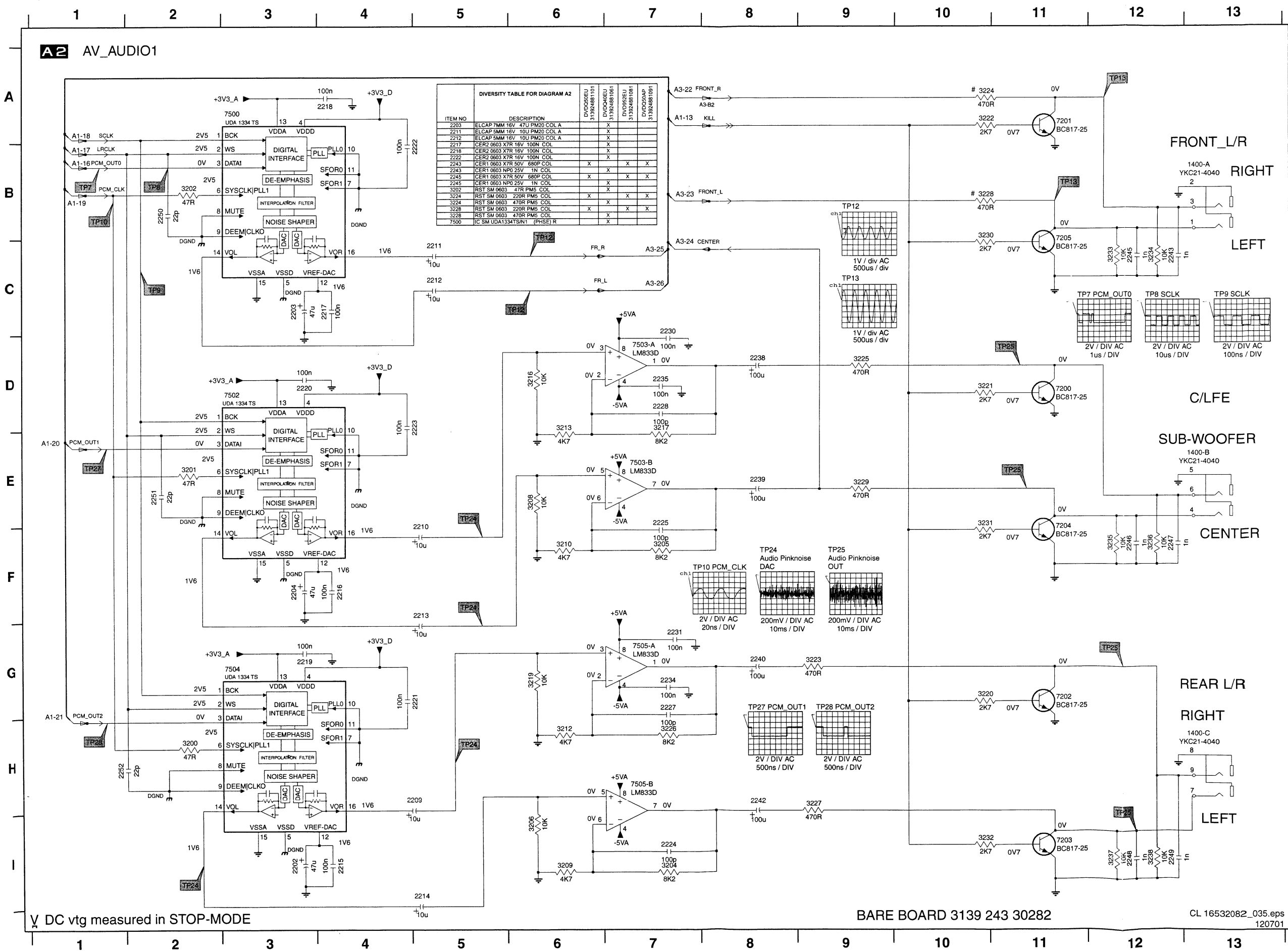
BARE BOARD 3139 243 30282

CL 16532082_034.eps

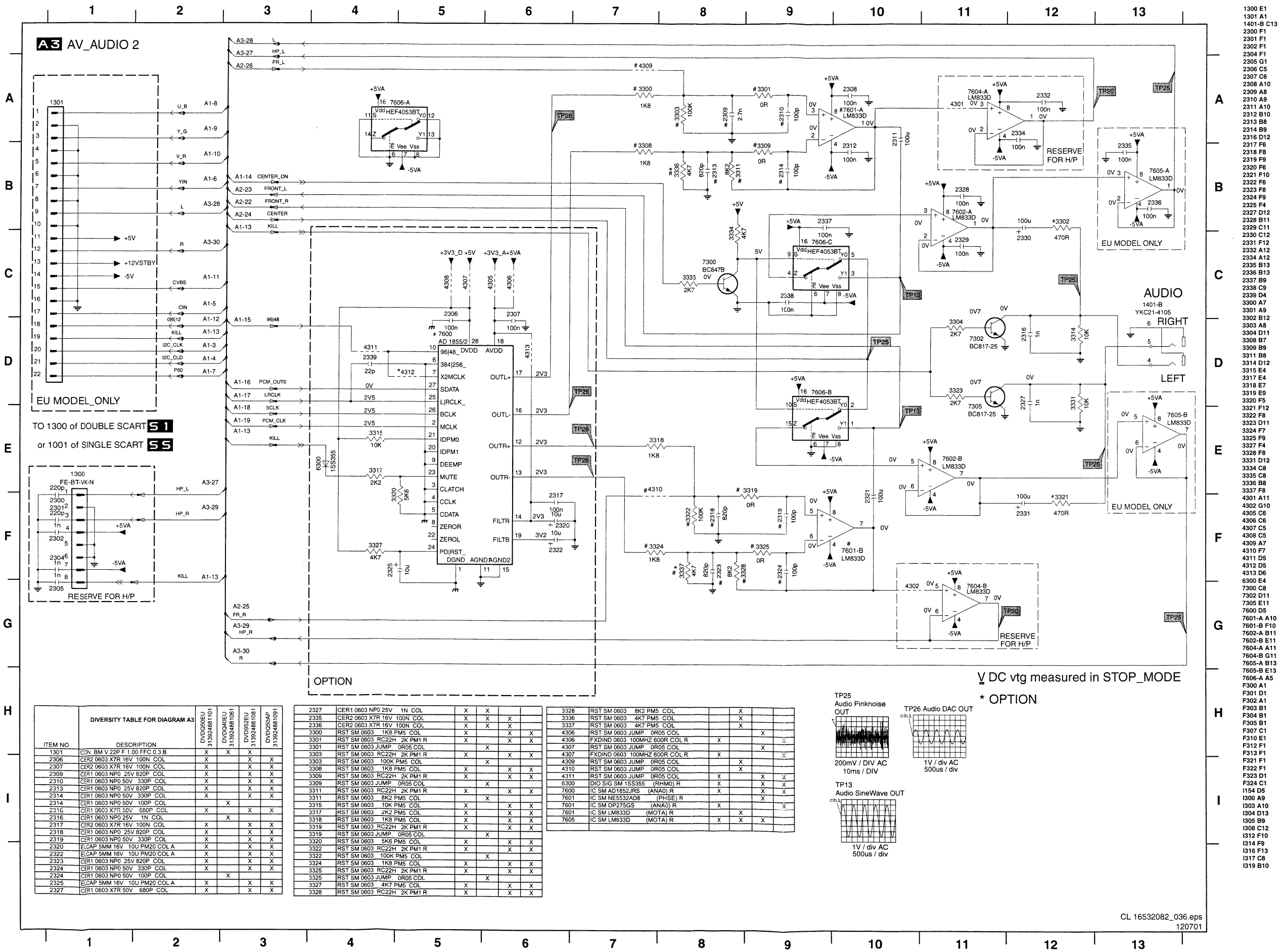
120701

1100 A1
1101 E1
1401-A E13
1402 G13
1403-A B13
1403-B C13
1403-C D13
1404 H13
1405 A13
2100 B4
2101 B4
2102 B4
2103 B4
2104 A6
2105 A7
2106 A7
2107 D9
2109 A9
2110 A8
2111 C4
2112 E3
2113 H2
2114 F12
2115 H12
2116 H12
2117 C4
2118 E3
2119 E4
2120 H7
2121 H10
2122 H10
2123 H12
2124 H12
2125 C12
2126 D12
2127 E12
2128 B11
2129 B12
2130 E4
2131 F4
2132 B3
3100 A3
3101 B3
3102 C11
3103 C11
3104 C11
3105 C4
3106 E10
3107 D3
3108 F10
3109 E8
3110 E8
3111 E8
3112 G10
3113 F7
3114 G10
3115 F7
3116 F7
3117 E3
3118 D3
3119 E3
3120 I8
3121 I9
3122 H11
3128 B11
3129 A11
4100 E5
4101 C12
4102 C12
4103 D12
4104 C3
4105 E1
4106 B11
4107 C3
4108 A8
4109 A9
4110 E10
4111 A9
4112 G4
4113 H4
4114 H4
4115 H4
4116 H4
4117 H4
4118 A2
5100 C12
5101 D12
5102 D12
5103 H11
5104 E10
6100 D4
6101 D4
6102 D10
6103 D11
6104 D11
6105 F10
6106 F10
6107 H10
7101 E8
7102 E7
7103 F7
7104 D3
7400 A7
7401 D4
7402 I8
7403 F3
7404 A2

A/V Board (Audio 1)



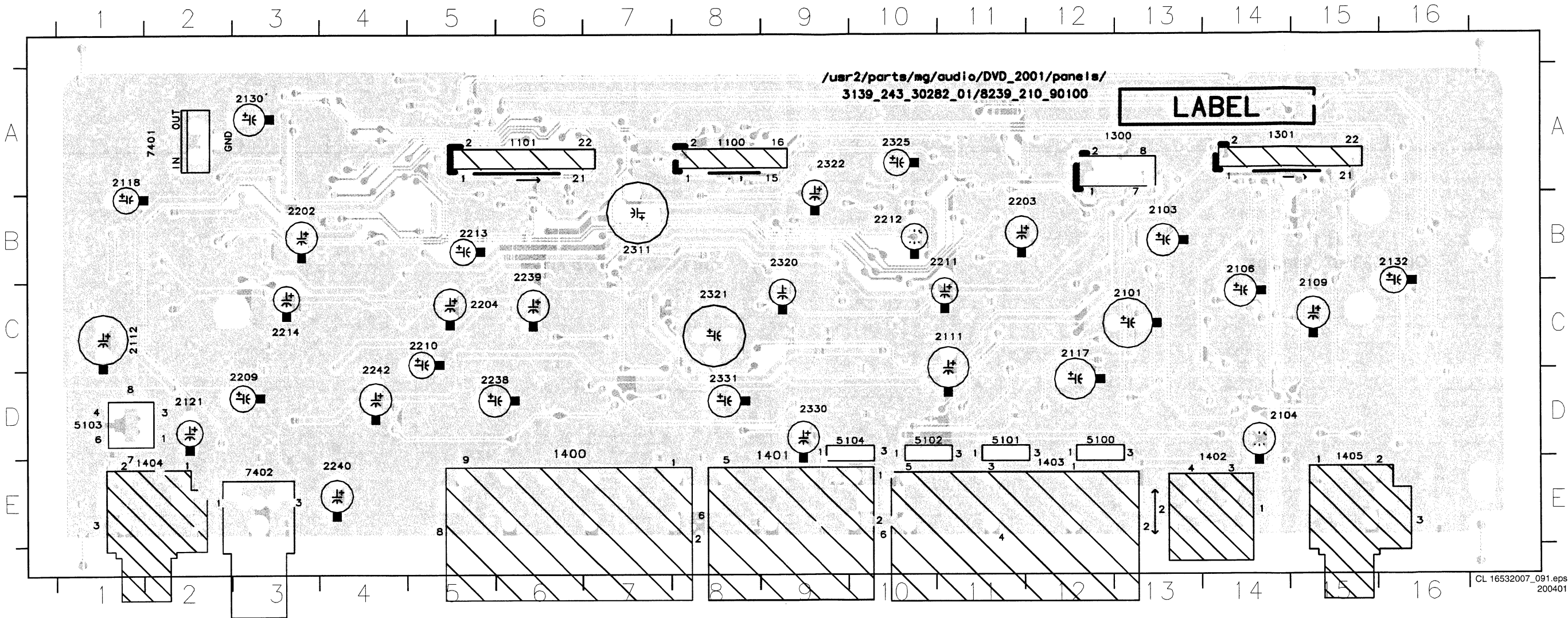
A/V Board (Audio 2)

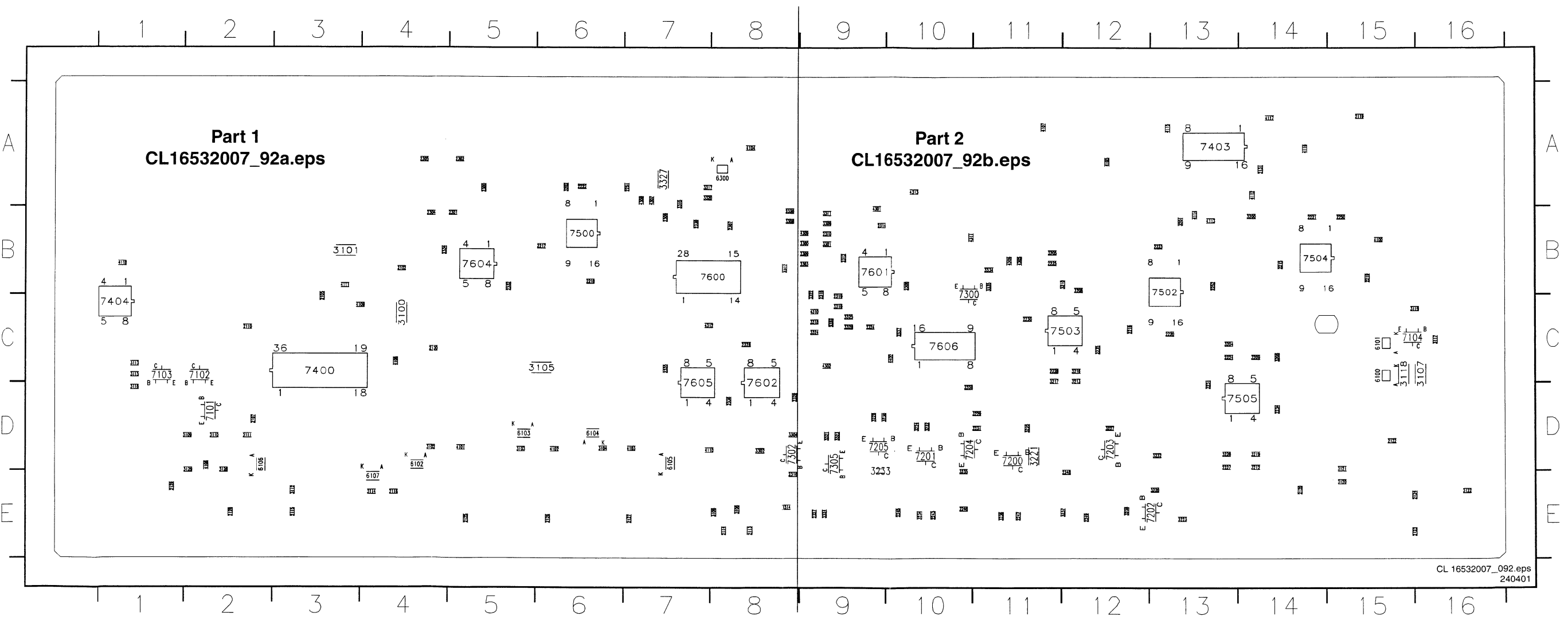


- 1300 E1
- 1301 A1
- 1401-B C13
- 2300 F1
- 2301 F1
- 2302 F1
- 2304 F1
- 2305 G1
- 2306 C5
- 2307 C6
- 2308 A10
- 2309 A8
- 2310 A9
- 2311 A10
- 2312 B10
- 2313 B8
- 2314 B9
- 2316 D12
- 2317 F6
- 2318 F8
- 2319 F9
- 2320 F6
- 2321 F10
- 2322 F6
- 2323 F8
- 2324 F9
- 2327 D12
- 2328 B11
- 2329 C11
- 2330 C12
- 2331 F12
- 2332 A12
- 2334 A12
- 2335 B13
- 2336 B13
- 2337 B9
- 2338 C9
- 2339 D4
- 2340 A7
- 3301 A9
- 3302 B12
- 3303 A8
- 3304 D11
- 3308 B7
- 3309 B9
- 3311 B8
- 3314 D12
- 3315 E4
- 3317 E4
- 3318 E7
- 3319 E9
- 3320 F5
- 3321 F12
- 3322 F8
- 3323 D11
- 3324 F7
- 3325 F9
- 3327 F4
- 3328 F8
- 3331 D12
- 3334 C8
- 3335 C8
- 3336 B8
- 3337 F8
- 4301 A11
- 4302 G10
- 4305 C6
- 4306 C6
- 4307 C5
- 4308 C5
- 4309 A7
- 4310 F7
- 4311 D5
- 4312 D5
- 4313 D6
- 6300 E4
- 7300 C8
- 7302 D11
- 7305 E11
- 7600 D5
- 7601-A A10
- 7601-B F10
- 7602-A B11
- 7602-B E11
- 7604-A A11
- 7604-B G11
- 7605-A B13
- 7605-B E13
- 7606-A A5
- F300 A1
- F301 D1
- F302 A1
- F303 B1
- F304 B1
- F305 B1
- F307 C1
- F310 E1
- F312 F1
- F313 F1
- F321 F1
- F322 F1
- F323 D1
- F324 C1
- I54 D5
- I300 A9
- I303 A10
- I304 D13
- I305 B9
- I308 C12
- I312 F10
- I314 F9
- I316 F13
- I317 C8
- I319 B10
- I321 C11
- I324 E10
- I326 E11
- I331 A7
- I332 B7
- I333 E5
- I334 E7
- I335 E5
- I336 E7
- I337 F6
- I338 F5
- I339 F6
- I340 A11
- I341 B8
- I342 B10
- I343 B12
- I344 C8
- I345 D11
- I346 D11
- I347 E10
- I348 F12
- I349 F8
- I350 G11
- I351 E4
- I352 A8
- I353 E8

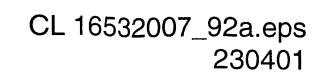
Layout A/V Board (Top View)

1100 A8 1301 A14 1402 E14 1405 E15 2104 D14 2111 C11 2118 A1 2132 B16 2204 C5 2211 B11 2214 C3 2240 E4 2320 B9 2325 A10 5100 D12 5103 D1 7402 E3
1101 A6 1400 D6 1403 E12 2101 C13 2106 B14 2112 C1 2121 D2 2202 B3 2209 D3 2212 B10 2238 D5 2242 C4 2321 C8 2330 D9 5101 D11 5104 D10
1300 A13 1401 D9 1404 E2 2103 B13 2109 C15 2117 C12 2130 A3 2203 B11 2210 C5 2213 B5 2239 B6 2311 B7 2322 A9 2331 D8 5102 D10 7401 A2

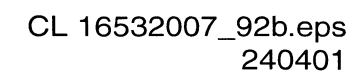


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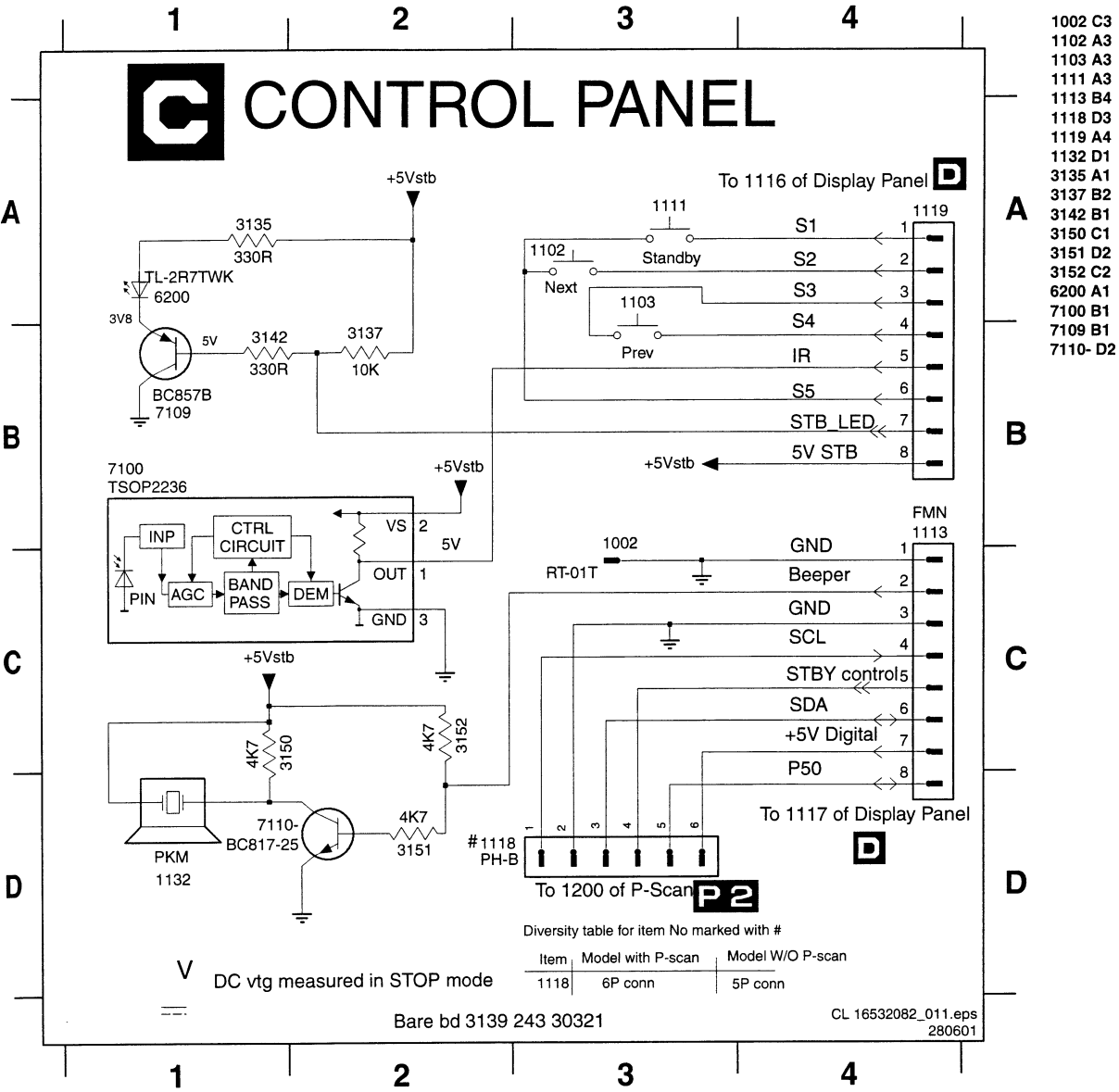
1 2 3 4 5 6 7 8



9 10 11 12 13 14 15 16



Control Panel



Layout Control Panel (Top View)

1002 C2 1102 B8 1103 B7 1111 B3 1113 C7 1118 C5 1119 C8 1132 B5 6200 B3 7100 A5

1

2

3

4

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A

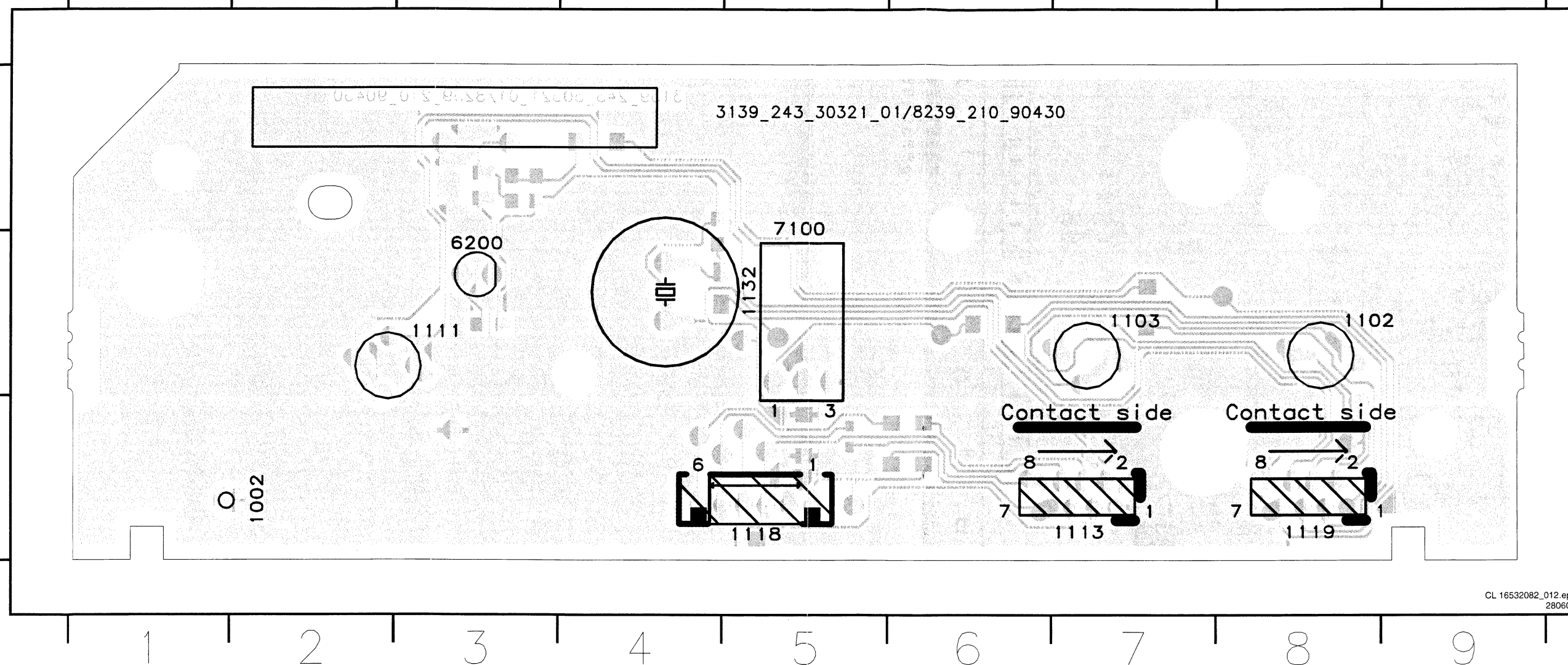
B

C

A

B

C



Layout Control Panel (Bottom View)

3135 B7 3142 A7 4134 B3 4136 C4 4138 C5 4305 C5 7109 A7
3137 A7 3150 B6 4135 B4 4137 C4 4139 A6 6105 B6

1 2 3 4 5 6 7 8 9

A

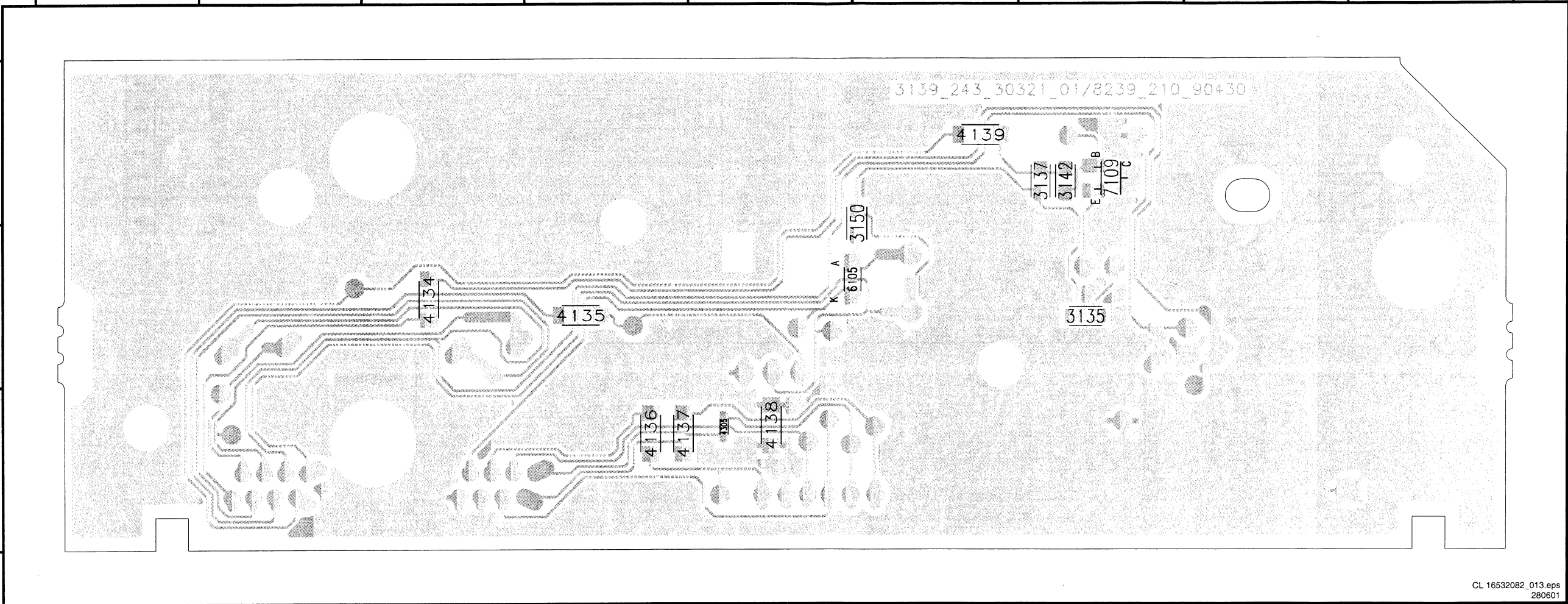
B

C

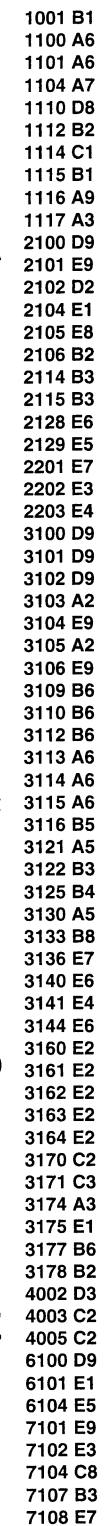
A

B

C



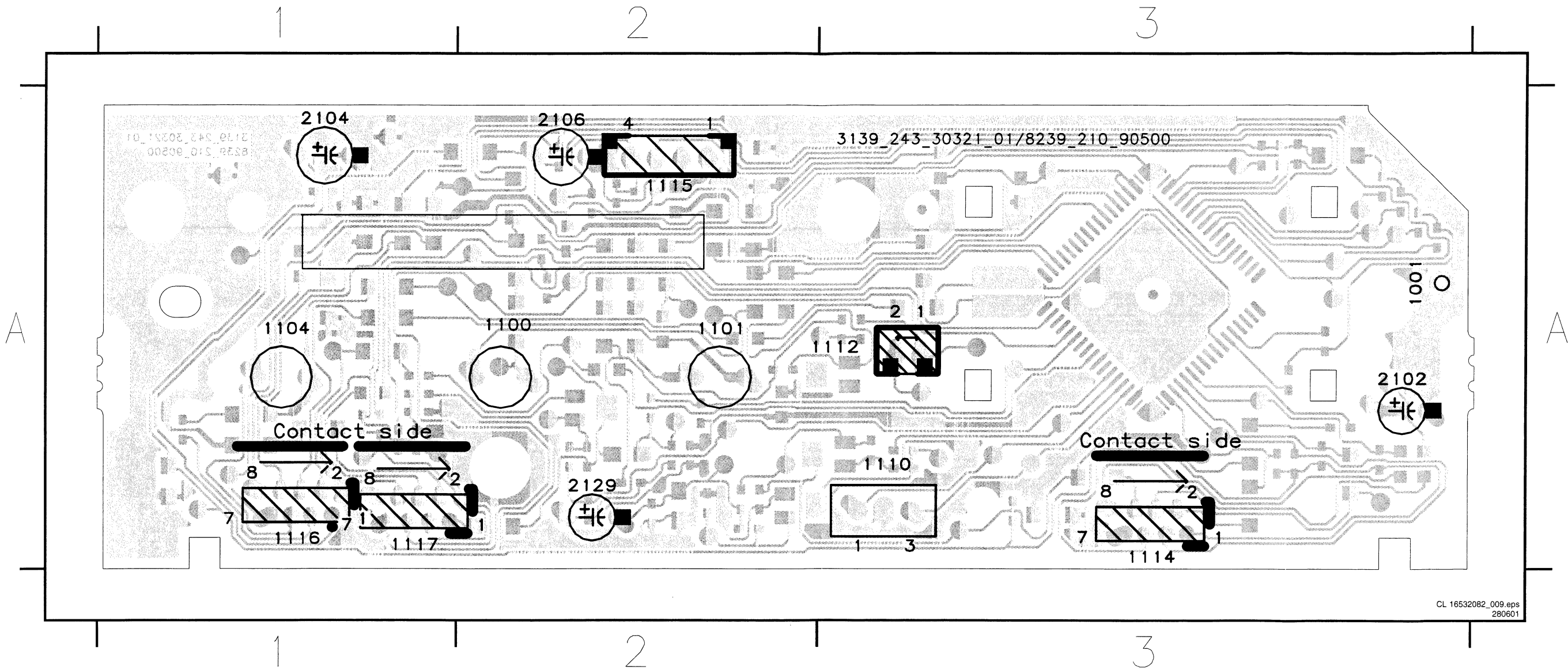
DISPLAY PANEL



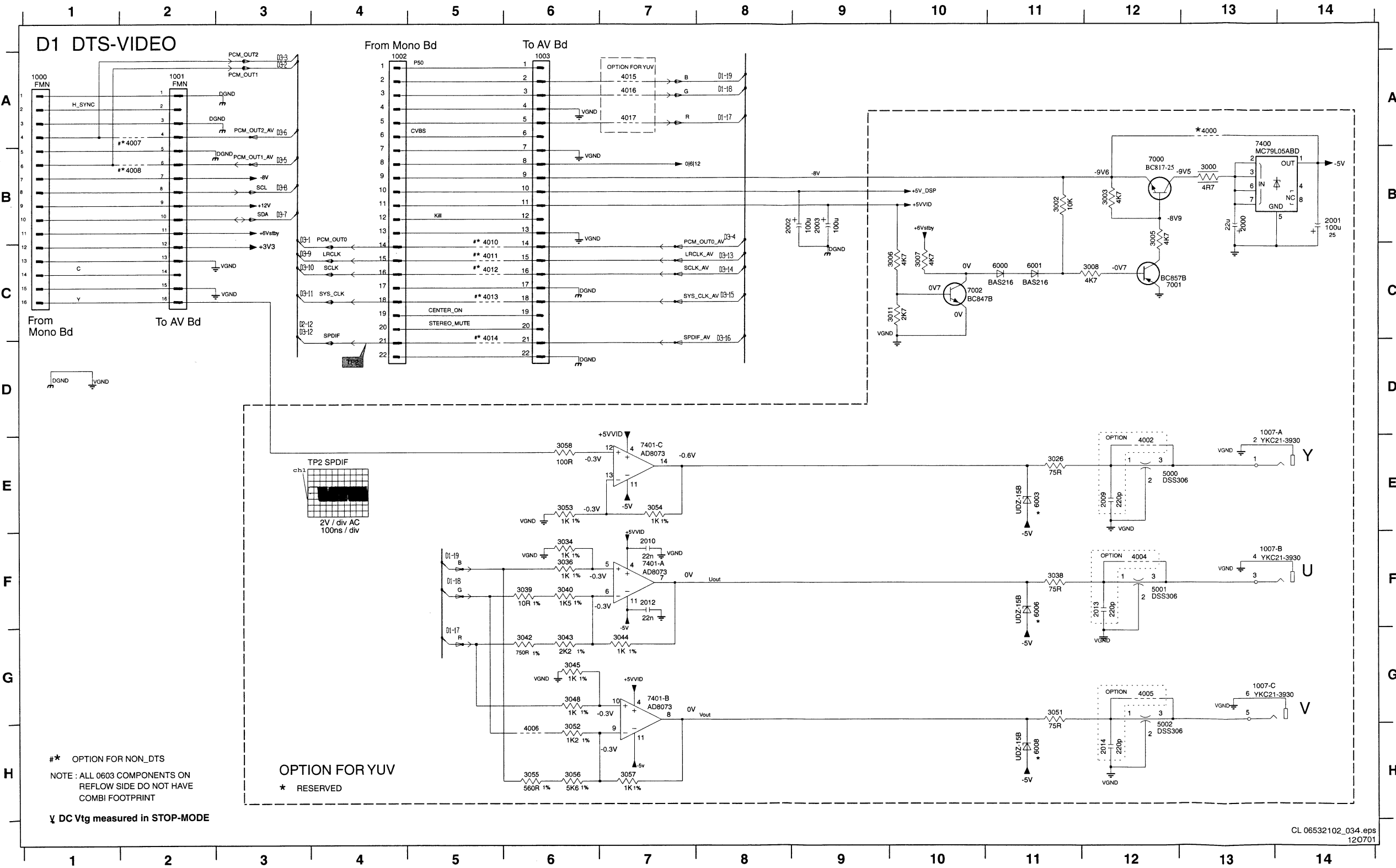
CL 16532082_008.eps
280601

Layout Display Board (Top View)

1001 A3 1101 A2 1110 A3 1114 A3 1116 A1 2102 A3 2106 A2
1100 A2 1104 A1 1112 A3 1115 A2 1117 A1 2104 A1 2129 A2

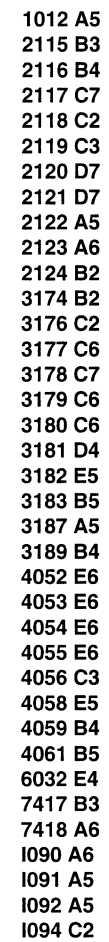


DTS video



1000 A1	F030 B6
1001 A2	F031 B6
1002 A4	F032 B6
1003 A6	F033 B6
1007-A D13	F034 B5
1007-B F13	F035 B6
1007-C G13	F036 B6
2000 B13	F037 C6
2001 B14	F038 C6
2002 B8	F039 C6
2003 B9	F040 C6
2009 E12	F041 C5
2010 F7	F042 C5
2012 F7	F043 C6
2013 F12	F044 D6
2014 H12	F045 C5
3000 B13	I022 B14
3002 B11	I029 E13
3003 B12	I030 E13
3005 B12	I031 F13
3006 C10	I032 F13
3007 C10	I033 G13
3008 C12	I034 H13
3011 C10	I036 E11
3026 E11	I037 F11
3034 F6	I038 G11
3036 F6	I039 C9
3038 F11	I040 C10
3039 F6	I041 C11
3040 F6	I042 B12
3042 G6	
3043 G6	
3044 G7	
3045 G6	
3048 G6	
3051 G11	
3052 H6	
3053 E6	
3054 E7	
3055 H6	
3056 H6	
3057 H7	
3058 E6	
4000 A13	
4002 E12	
4004 F12	
4005 G12	
4006 H6	
4007 A2	
4008 B2	
4010 C5	
4011 C5	
4012 C5	
4013 C5	
4014 D5	
4015 A7	
4016 A7	
4017 A7	
5000 E12	
5001 F12	
5002 H12	
6000 C11	
6001 C11	
6003 E11	
6006 F11	
6008 H11	
7000 B12	
7001 C12	
7002 C10	
7400 A13	
7401-A F7	
7401-B G7	
7401-C E7	
F000 A1	
F001 B1	
F003 A2	
F004 A2	
F005 A2	
F006 A2	
F007 A2	
F008 B2	
F009 B2	
F010 B2	
F011 B2	
F012 B2	
F013 B2	
F014 B2	
F015 C2	
F016 C2	
F017 C2	
F018 C2	
F019 B5	
F020 C5	
F021 C5	
F022 C5	
F023 A5	
F024 A6	
F025 A6	
F026 A6	
F027 A6	
F028 A5	
F029 A6	

D2 DTS_DAI0



V DC Vtg measured in STOP-MODE

DTS Decoder

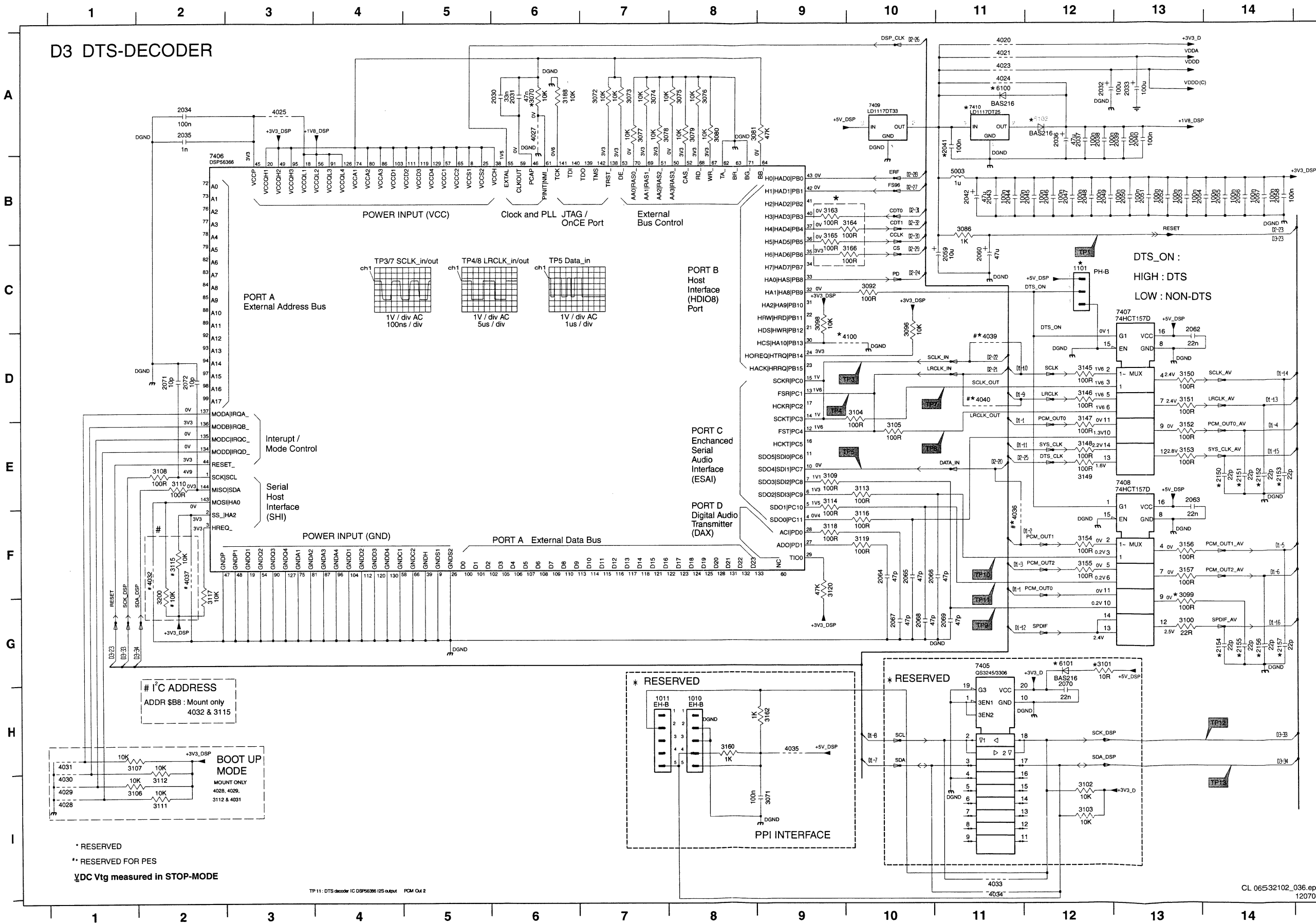
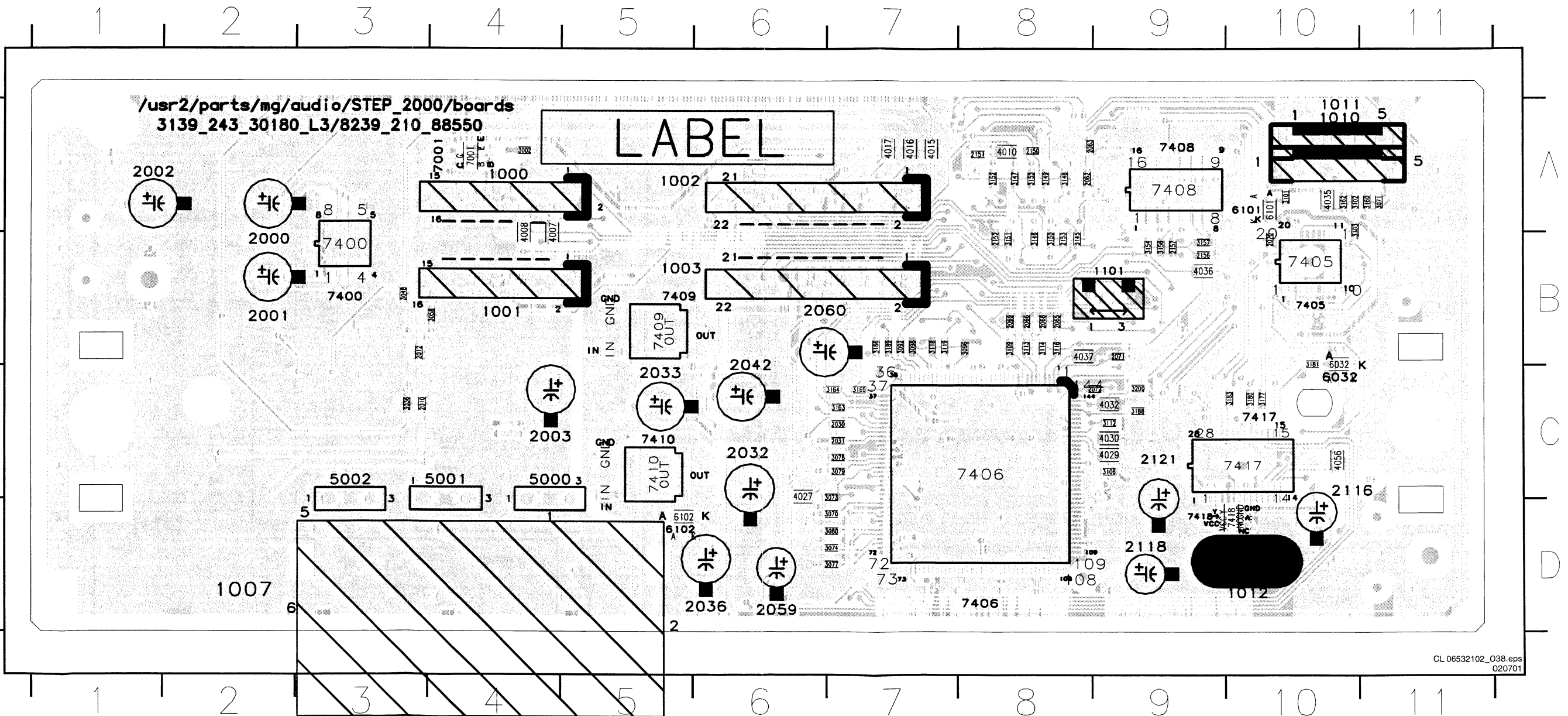


Table of components and their locations (Pin, Component, Location).

1010 H8	4028 H1
1011 H8	4029 H1
1101 C12	4030 H1
2030 A6	4031 H1
2031 A6	4032 F2
2032 A12	4033 I11
2033 A13	4034 I11
2034 A2	4035 H9
2035 A2	4036 F11
2036 A12	4037 F2
2037 A12	4038 D11
2038 A12	4039 D11
2039 A13	4100 D10
2040 A13	5003 B11
2041 A11	6100 A11
2042 B11	6101 G12
2043 B11	6102 A12
2044 B11	7405 G11
2045 B12	7406 B2
2046 B12	7407 C13
2047 B12	7408 E13
2048 B12	7409 A10
2049 B12	7410 A11
2050 B13	I050 A6
2051 B13	I054 A7
2052 B13	I055 A7
2053 B13	I056 A13
2054 B13	I057 A13
2055 B14	I058 A13
2056 B14	I059 A13
2057 B14	I060 A13
2058 B14	I061 B14
2059 C11	I062 B12
2060 C11	I063 D2
2062 D13	I064 D2
2063 E13	I065 E2
2064 F10	I066 E2
2065 F10	I067 F1
2066 F10	I068 F2
2067 G10	I069 E2
2068 G10	I070 G5
2069 G11	I071 B10
2070 H12	I072 B10
2071 D2	I073 B10
2072 D2	I074 C10
2150 E14	I075 D10
2151 E14	I076 D10
2152 E14	I077 D10
2153 E14	I078 E10
2154 G14	I079 C12
2155 G14	I080 D12
2156 G14	I081 E10
2157 G14	I082 E10
3070 A6	I083 F10
3071 I9	I084 F10
3072 A7	I085 F10
3073 A7	I086 H7
3074 A7	I087 H8
3075 A8	I088 B6
3076 A8	I089 E9
3077 A7	I100 H9
3078 A7	I101 E10
3079 A8	I102 F14
3080 A8	I103 E2
3081 A8	I104 D9
3086 B11	
3092 C10	
3096 C10	
3098 C9	
3099 G13	
3100 G13	
3101 G12	
3102 I12	
3103 I12	
3104 D10	
3105 E10	
3106 H1	
3107 H1	
3108 E2	
3109 E9	
3110 E2	
3111 H2	
3112 H2	
3113 E10	
3114 E9	
3115 F2	
3116 F10	
3117 F2	
3118 F9	
3119 F10	
3120 F9	
3145 D12	
3146 D12	
3147 E12	
3148 E12	
3149 E12	
3150 D13	
3151 D13	
3152 E13	
3153 E13	
3154 F12	
3155 F12	
3156 F13	
3157 F13	
3160 H8	
3162 H8	
3163 B9	
3164 B10	
3165 B9	
3166 C10	
3188 A6	
3200 F2	
4020 A11	
4021 A11	
4023 A11	
4024 A11	
4025 A3	
4027 A6	



Layout DTS Panel (Bottom View)

20009	D8	2045	C5	2057	D4	2155	A2	3040	C9	3072	C3	3111	D3	4002	D8	4025	C5	4059	B6	7401	C9
20013	D9	2046	D5	2058	D4	3000	A9	3042	C9	3075	C5	3115	B4	4004	D9	4028	D3	4061	D3	7407	A4
20014	D9	2047	D5	2064	BB4	3003	A9	3043	C9	3076	D5	3117	B4	4005	D9	4031	C3	4100	BB5		
20034	C5	2048	C5	2067	BB5	3005	A9	3044	C9	3081	D5	3120	CC5	4006	B9	4033	A2	5003	B6		
20035	C5	2049	CC4	2115	D2	3006	A7	3045	C9	3086	C6	3155	B5	4011	B4	4034	BB1	6000	A7		
20037	C5	2050	CC4	2117	D3	3007	A7	3046	C9	3099	C6	3174	CC2	4012	B4	4039	BB4	6001	A7		
20038	C4	2051	C5	2119	D3	3008	A8	3052	B9	3100	A3	3176	CC2	4013	A4	4040	BB3	6003	C7		
20039	D4	2052	D4	2120	CC3	3011	A7	3053	BB8	3104	B4	3178	CC2	4014	B6	4052	BB3	6006	CC8		
20040	C4	2053	D4	2122	D3	3026	C8	3054	BB8	3105	B4	3179	B2	4020	C6	4053	BB3	6008	CC10		
20041	C7	2054	D4	2123	D2	3034	C9	3055	BB10	3107	C3	3182	B2	4021	C7	4054	BB3	6100	D7		
20043	C6	2055	C4	2124	C2	3038	C9	3056	BB9	3108	B3	3187	D2	4023	C6	4055	BB2	7000	A9		
20044	C5	2056	D5	2154	A3	3039	C9	3057	BB9	3110	C3	4000	A9	4024	C6	4058	B2	7002	A7		

1 2 3 4 5 6 7 8 9 10 11

A

B

C

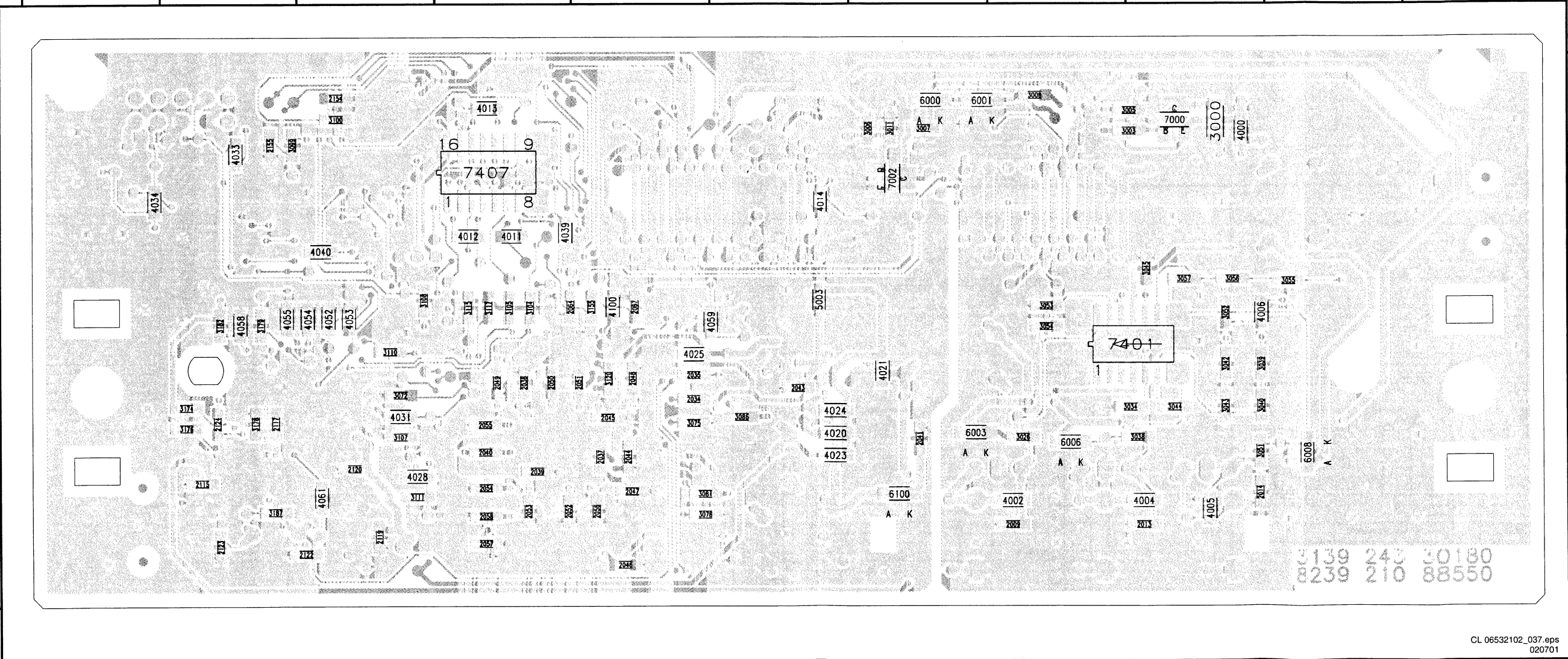
D

A

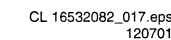
B

C

D



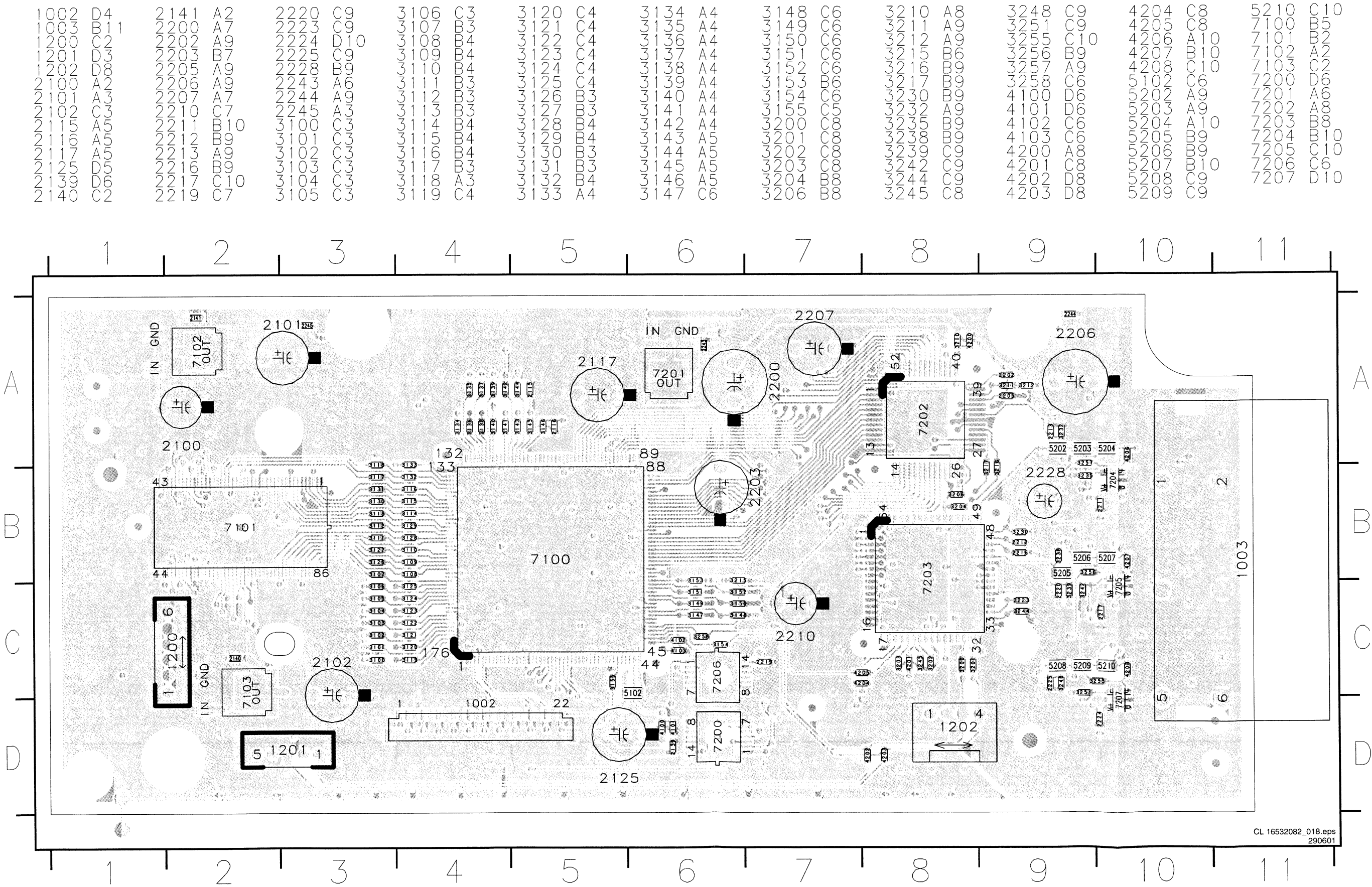
P 2 High Quality YUV



DIVERSITY TABLE FOR DIAGRAM P2		DVQ08 AP Progressive YUV	DVQ08 EU High Quality YUV
ITEM NO.	DESCRIPTION		
2212	CE2 0603 X7R 16V 100N COL		
2213	CE1 0603 NP0 50V 6P8 COL	X	
2213	CER1 0603 NP0 50V 27P COL		X
2214	CER1 0603 NP0 50V 22P COL	X	
2214	CE03 0603 NP0 50V 68P COL		X
2215	CER1 0603 NP0 50V 18P COL		
2216	CE2 0603 X7R 50V 1N COL		X
2218	CE2 0603 X7R 16V 100N COL	X	
2219	CE2 0603 X7R 16V 100N COL	X	
2220	NP20 0603 NP0 50V 6P8 COL	X	
2220	CER1 0603 NP0 50V 27P COL		X
2221	CE03 0603 NP0 50V 22P COL	X	
2221	CER1 0603 NP0 50V 68P COL		X
2222	CE03 0603 NP0 50V 18P COL	X	X
2223	CE2 0603 X7R 50V 1N COL		X
2225	CE03 0603 NP0 50V 6P8 COL	X	
2225	CER1 0603 NP0 50V 27P COL		X
2226	CER1 0603 NP0 50V 22P COL	X	
2226	CER1 0603 NP0 50V 68P COL		X
2227	CER1 0603 NP0 50V 18P COL	X	
2229	CE03 0603 NP0 50V 100P COL		X
2230	CER1 0603 NP0 50V 100P COL		X
2231	CE03 0603 NP0 50V 100P COL		X
2232	CE2 0603 X7R 16V 100N COL	X	
2233	CE2 0603 X7R 16V 100N COL		X
2234	CE2 0603 X7R 16V 100N COL		X
2235	CE2 0603 X7R 16V 100N COL		X
2236	CE2 0603 X7R 16V 100N COL		X
2237	CE2 0603 X7R 16V 100N COL	X	
2238	CE2 0603 X7R 16V 100N COL		X
2239	CE2 0603 X7R 16V 100N COL		X
3200	RST SM 0603 10K PM5 COL		X
3201	RST SM 0603 10K PM5 COL		X
3204	RST SM 0603 10K PM5 COL		X
3230	RST SM 0603 1K2 PM5 COL		X
3240	RST SM 0603 1K2 PM5 COL		X
3245	RST SM 0603 4K7 PM5 COL	X	X
4204	RST SM 0603 JUMP 0R05 COL R		
5202	FXIND SM 0805 6U8 PM20 COL R	X	
5202	FXIND SM 0805 10U PM20 COL R		X
5203	FXIND SM 0805 10U PM10 COL R		X
5203	RST SM 0805 JUMP 0R05 COL R		X
5204	FXIND SM 0805 2U2 PM10 COL R	X	
5204	FXIND SM 0805 10U PM10 COL R		X
5205	FXIND SM 0805 6U8 PM10 COL R	X	
5205	FXIND SM 0805 10U PM20 COL R		X
5206	FXIND SM 0805 10U PM10 COL R	X	X
5206	RST SM 0805 JUMP 0R05 COL R		X
5207	FXIND SM 0805 2U2 PM10 COL R	X	X
5207	FXIND SM 0805 10U PM10 COL R		X
5208	FXIND SM 0805 6U8 PM10 COL R	X	
5208	FXIND SM 0805 2U2 PM20 COL R		X
5209	FXIND SM 0805 10U PM10 COL R		X
5209	RST SM 0805 JUMP 0R05 COL R		X
5210	FXIND SM 0805 2U2 PM10 COL R	X	X
5210	FXIND SM 0805 10U PM10 COL R		X
7200	IC SM 74LV174DB (PHSE) R	X	X
7203	IC SM ADV7190KST (ANAG) R		
7206	IC SM 74LV1786DB (PHSE) R	X	X

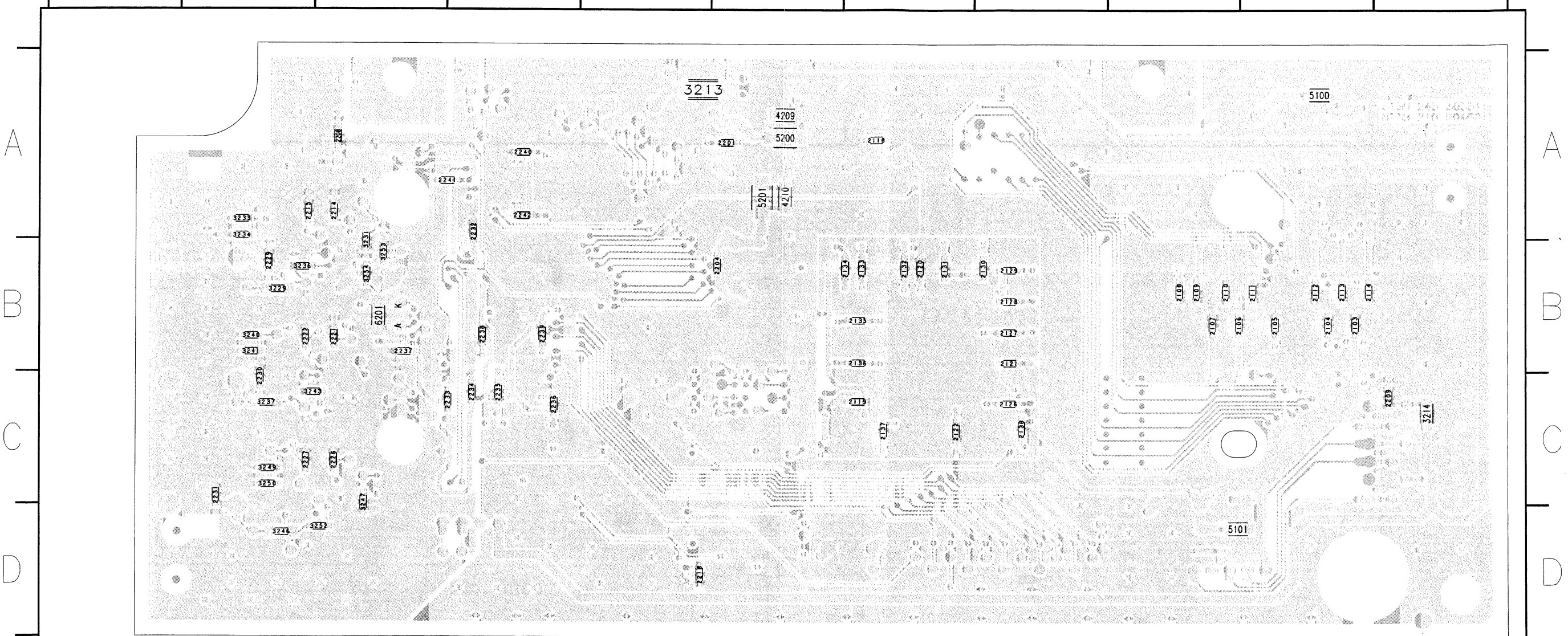
3254 A10
3255 A11
3256 A12
3257 A11
4201 E8
4202 B3
4203 B3
4204 F5
4205 F5
4206 B12
4207 C12
4208 D12
4209 A5
4210 B5
5200 A5
5201 B5
5202 A10
5203 A10
5204 A11
5205 C10
5206 C10
5207 C11
5208 D10
5209 D10
5210 D11
6201 A11
7200-A G2
7201 A5
7203 E6
7204 A13
7205 C13
7206-A G3
7207 D13

Layout High Quality YUV (Top View)

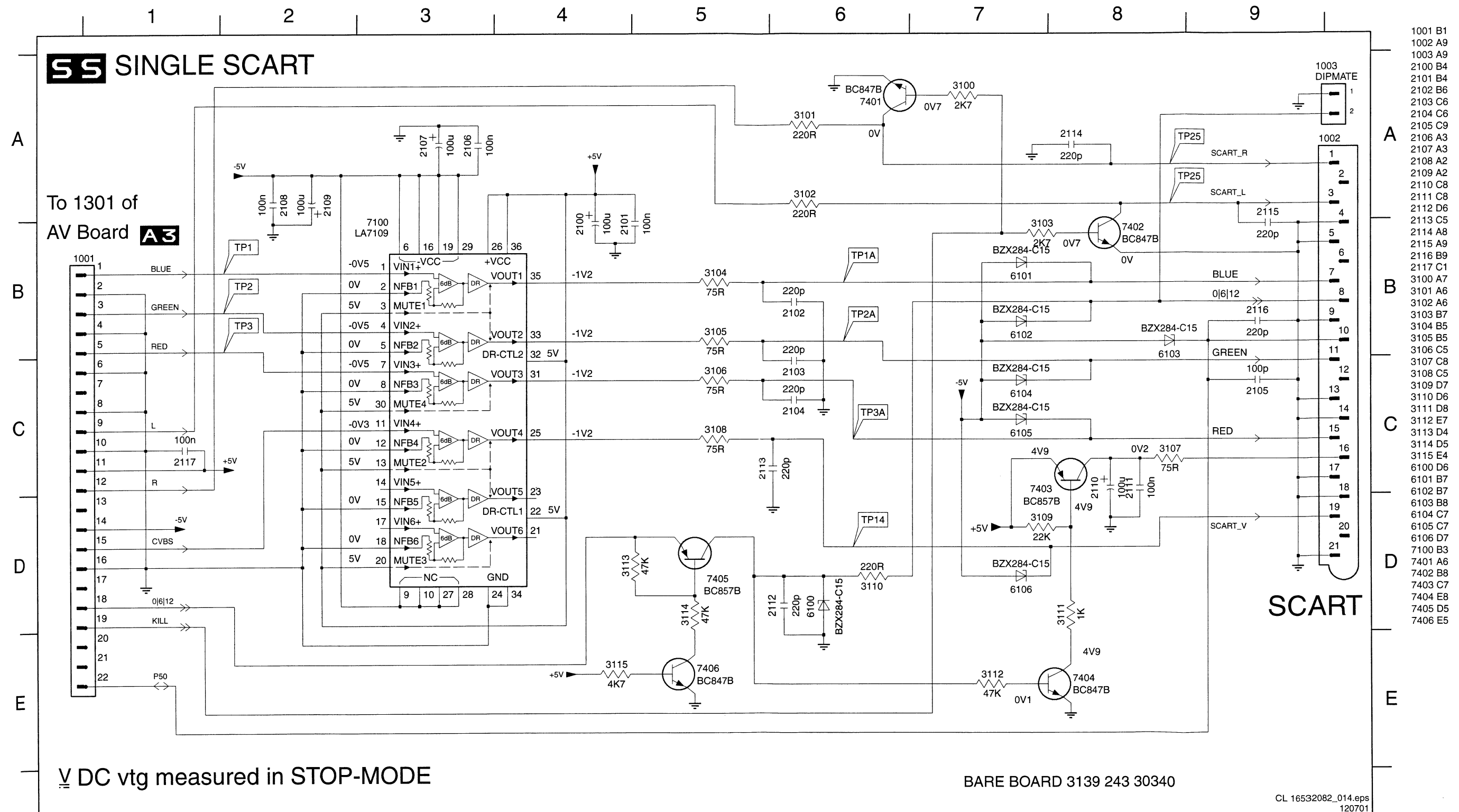


Layout High Quality YUV (Bottom View)

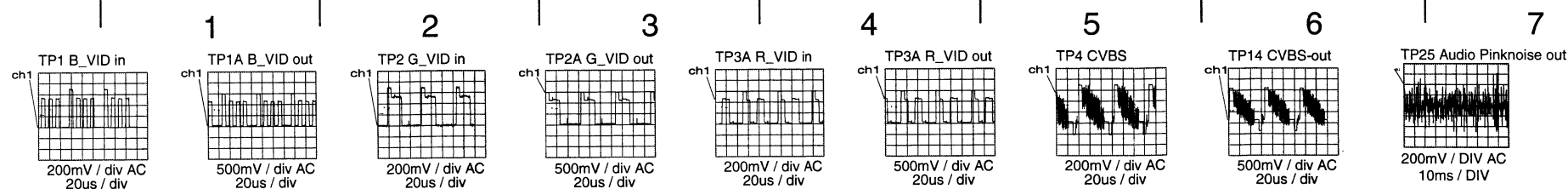
2103	B10	2111	B10	2122	C7	2133	B7	2208	A3	2227	C2	2236	C4	3214	C11	3241	B2	3254	B3	
2104	B10	2112	B10	2126	C8	2134	B7	2209	C11	2229	B2	2237	B3	3229	B2	3243	C3	4209	A6	
2105	B10	2113	B10	2127	B8	2135	B7	2214	A3	2230	C2	2238	B4	3231	B3	3246	D2	4210	A6	
2106	B10	2114	B10	2128	B8	2136	B7	2215	A2	2231	C2	2239	B4	3233	A2	3247	C3	5100	A10	
2107	B9	2118	A7	2129	B8	2137	C7	2218	D5	2232	A4	2240	A4	3234	A2	3249	C2	5101	D9	
2108	B9	2119	C7	2130	B8	2138	C8	2221	B3	2233	C4	2241	A4	3236	B2	3250	C2	5200	A6	
2109	B9	2120	B7	2131	B7	2201	A6	2222	B2	2234	C4	2242	A4	3237	C2	3252	D3	5201	A6	
2110	B9	2121	B8	2132	B7	2204	B6	2226	C3	2235	C4	3213	A5	3240	B2	3253	B3	6201	B3	
1		2		3		4		5		6		7		8		9		10		11



Single SCART

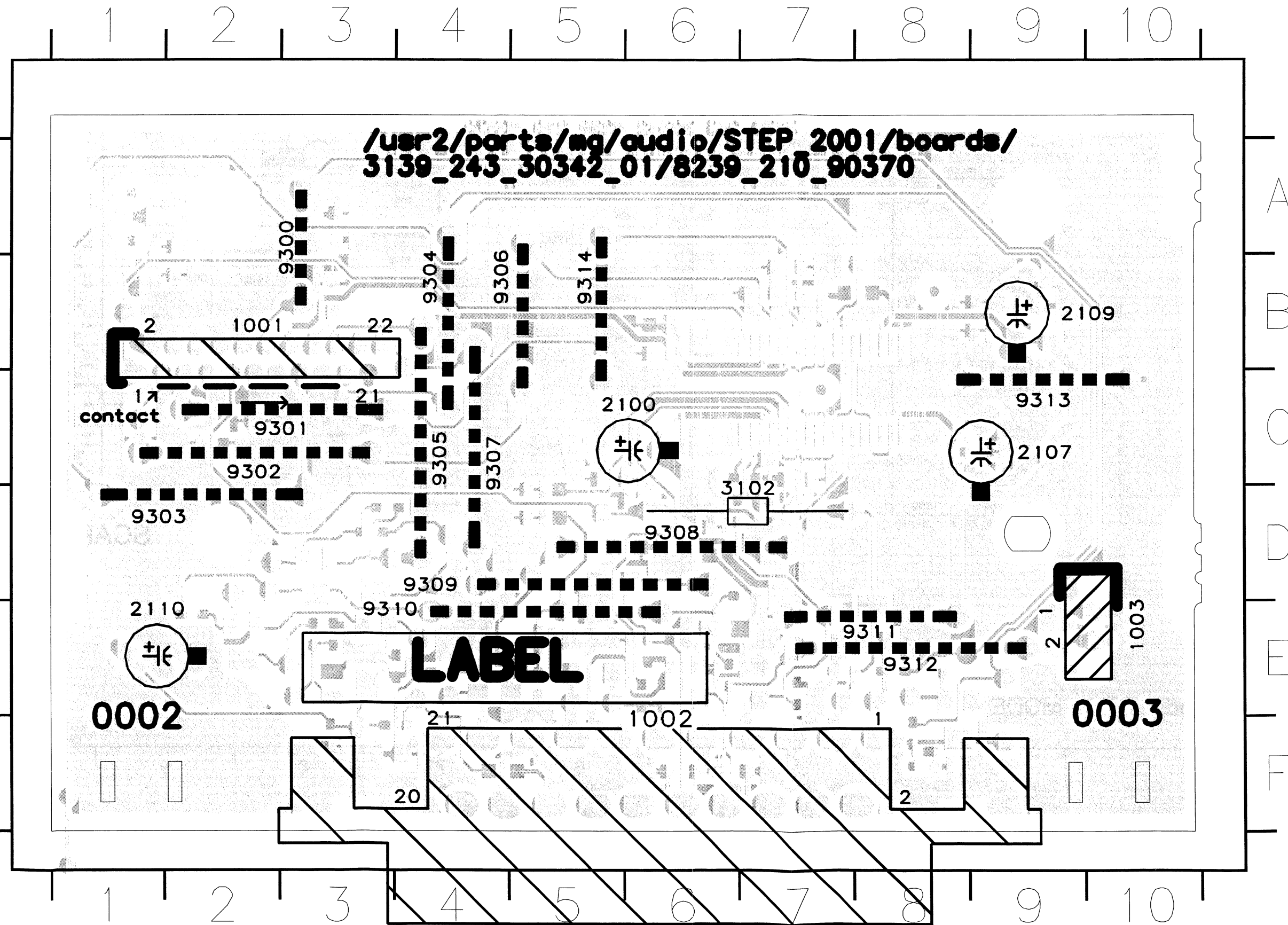


1001 B1
1002 A9
1003 A9
2100 B4
2101 B4
2102 B6
2103 C6
2104 C6
2105 C9
2106 A3
2107 A3
2108 A2
2109 A2
2110 C8
2111 C8
2112 D6
2113 C5
2114 A8
2115 A9
2116 B9
2117 C1
3100 A7
3101 A6
3102 A6
3103 B7
3104 B5
3105 B5
3106 C5
3107 C8
3108 C5
3109 D7
3110 D6
3111 D8
3112 E7
3113 D4
3114 D5
3115 E4
6100 D6
6101 B7
6102 B7
6103 B8
6104 C7
6105 C7
6106 D7
7100 B3
7401 A6
7402 B8
7403 C7
7404 E8
7405 D5
7406 E5



Layout SCART Board (Top View)

1001	B2	2107	C9	9300	A3	9304	B4	9308	D6	9312	E8
1002	F6	2109	B10	9301	C3	9305	C4	9309	D4	9313	C9
1003	E10	2110	E1	9302	C2	9306	B4	9310	E3	9314	B5
2100	C6	3102	D7	9303	D1	9307	C4	9311	E8		



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This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

8. Alignments

No electrical alignments available

9. Circuit Descriptions and List of Abbreviations

9.1 Index

- 9.1.1 Index
- 9.1.2 Introduction
- 9.1.3 Power Supply
- 9.1.4 Loader/Monoboard
- 9.1.5 Data Processing
- 9.1.6 Control and Display
- 9.1.7 Abbreviations

Notes:

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.2 Introduction

9.2.1 Features

The Step2001 range is a 3rd generation DVD player. It contains many new features, such as:

- MP3 playability,
- Digital Crystal Clear,
- DTS decoding,
- Progressive/High Quality YUV,
- Component video out,
- Smart picture,
- Zoom + perfect still,
- Disc lock,
- 5 Disc resume,
- CD-RW compatible.

9.2.2 Differences

The Step2001 has, compared to its predecessor the Step2000, a new DVD module called the SD3.x. The main difference between the SD1/2 and the SD3 is the new main DVD processor (Sti5508/STi5580), which has enhanced audio features like MP3, colour setting, NTSC/PAL conversion and DTS decoder (only for STi5580).

All A/V functional requirements are the same as for the DVD 2B except for:

- no YUV matrix, colour setting IC, Karaoke IC and headphone,
- a new audio DAC, SCART board and Progressive Scan board,
- a re-used A/V board (however some models have a new Front Audio DAC).

All display functional requirements are the same as the DVD 2B except for:

- a new LCD display.

9.2.3 Modules

The main modules are:

- Power Supply Unit (PSU).
- SD3.x DVD module (Loader VAL6011 + Monoboard).

- Digital Theatre Sound (DTS) Board (only for SD3.0 with host processor Sti5508).
- Audio Video / (A/V) Board.
- Display/Control Board.
- SCART Board (only for Europe).
- Progressive Scan Board (only for Q50).

Note:

There are two different SD3.x executions:

- SD3.0 refers to DVD module with host processor Sti5508 and
- SD3.1 refers to DVD module with host processor Sti5580.

9.2.4 Service

This SD3.x has the same ComPair connector as in all previous DVD generations. Flashing of the application SW is now possible with the ComPair cable and a CDR disc (except for sets with Mask-ROM software).

9.3 Power Supply

Note: There are two different Power Supply modules used, due to different suppliers (Billion or EPM). The 'Billion' module is used in AP and USA players, while the 'EPM' module is used for the other regions. Both modules are described separately.

9.3.1 'Billion' Power Supply Module (3139 248 70851)

Introduction

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC UC3842 to produce pulses to drive the power 'switch' (MOSFET). The regulation of the 'duty cycle', controls the supply output, at a fixed switching frequency (approximately 58 kHz, determined by the RC timing components at pin 4).

The UC3842 (item IC1) is a high performance, fixed frequency, current mode controller for DC-to-DC converter applications. This integrated circuit features:

- a trimmed oscillator for precise duty cycle control,
- a temperature compensated reference,
- a high gain error amplifier,
- a current sensing comparator and
- a high current totem pole output ideally suited for driving a power MOSFET (item Q1).

Also included are protective features consisting of input and reference under-voltage lockouts each with hysteresis, cycle by cycle current limiting, programmable output lead time and a latch for single pulse metering.

Output Voltages

- +12V_stdby (present during standby).
- +5V_stdby (present during standby).
- +5V_digital (will switch off via Q3 during Standby).
- +5V_AV (will switch off via Q3 during Standby).
- 3V3 (present during standby).
- -5V (will switch off during standby).

Operation

POWER SUPPLY

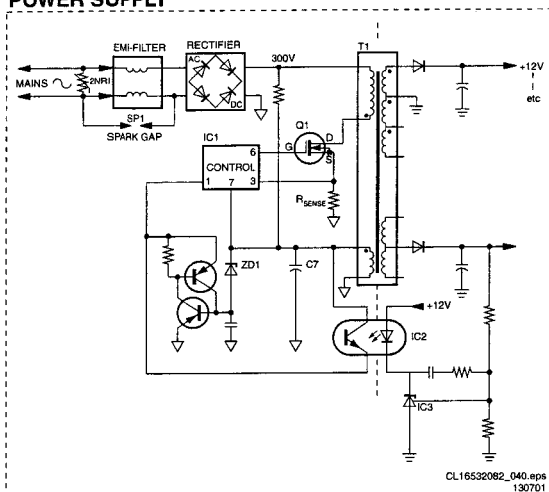


Figure 9-1

Mains Input Circuit

The bridge rectifier (D1-D4) rectifies the mains voltage, after which C5 smoothens this voltage. The DC voltage across this capacitor is the DC input voltage (approximately 300 V), to pin 1 of transformer T1.

The mains input also consists of a (differential mode) lightning protection ZNR1 and a (common mode) lightning protection SP1 (spark gap).

Start-up and Take-over Circuitry

With the mains voltage input, C7 will charge. When this voltage (at pin 7 of IC1), reaches the start-up threshold of min. 14.5V, the control circuit starts to operate. After start-up, IC1 requires a sinking current, which the start-up circuitry cannot deliver. Therefore a take-over circuitry (a coupled winding of transformer T1) is present. The voltage at this point will take over the supply voltage at pin 7 of the IC. If the take-over circuit does not function, the IC will switch off again at the minimal operating voltage of 8.5 V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

Secondary Voltage Sensing

The secondary voltage regulating circuit comprises of opto-coupler IC2 (which isolates the error signal from the control IC on the primary side), and a reference component IC3 (TL431).

The reference component has two functions:

- a very stable and accurate reference diode
- a high gain amplifier.

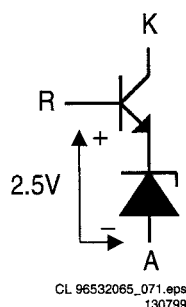


Figure 9-2

When the output voltage increases (due to a reduction in the load), the voltage across R23 increases to above the internal reference voltage of 2.5 V. IC3 will conduct and the current

through the opto-coupler will increase. This results in an increase of the voltage at pin 2 of IC1, which will reduce the on time of FET Q1.

In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

Primary Current Sensing

The current through FET Q1, will result in a voltage drop across R3A (R_{SENSE}). This line goes to pin 3 of IC1, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

Under-voltage Protection

Two under-voltage lockout comparators are incorporated, to guarantee that IC1 is fully functional before the output stage is enabled. Separate comparators with built-in hysteresis, monitor both the supply voltage at pin 7 and the reference voltage at pin 8.

If the supply voltage at pin 7 drops below 10 V (typical) e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 6 is disabled and the controller will switch 'off'.

Over-voltage Protection

The over-voltage circuitry (ZD1, Q7, and Q8) is used to detect an over-voltage situation on the secondary side of the transformer.

If, after start-up, the voltage at the zener diode ZD1 will exceeds its zener voltage, the internal latch circuit is triggered (via pin 1), the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.

Note: If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

9.3.2 'EPM' Power Supply Module (3122 427 22930 or 22930)

Introduction

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC TY720xx to produce pulses to drive the power 'switch' (MOSFET). The TY720xx (item 7101) is a high performance, current mode controller for DC-to-DC converter applications.

The operation frequency varies with the circuit load. When the output power demand decreases, the switching frequency raises, with a maximum frequency of 125 kHz (determined by C2107 at pin 5). At this point, the internal VCO takes over and starts to decrease the switching frequency.

This has some benefits compared to a 'fixed frequency' flyback converter. The efficiency is better, which results in a lower power consumption.

Note: See diagram in chapter 7.

Output Voltages

- +12V_stdby (present during standby).
- +5V_stdby (present during standby).
- +5V_digital (will switch off via TS7221 during Standby).
- +5V_AV (will switch off via TS7221 during Standby).
- 3V3 (present during standby).
- -5V (will switch off during standby).

Operation

Mains Input Circuit

The bridge rectifier (D6112-D6115) rectifies the mains voltage, after which C2121 smoothens it. The DC voltage across this capacitor is the DC input voltage (approximately 300V), to pin 2 of transformer T5131 and IC7101.

The mains input also consists of a (differential mode) lightning protection R3120 and a (common mode) lightning protection 1121/1122 (spark gap).

Start-up Circuitry

The rectified voltage from the bridge rectifier is connected to pin 1 via R3116. This voltage will charge the V_{CC} capacitor (C2102). When this voltage, (at pin 13 of 7101), reaches the start-up threshold of min 15 V, the control circuit starts to operate.

After start-up, IC 7101 requires a sinking current, which the start-up circuitry cannot deliver. Therefore a take-over circuitry (a coupled winding of transformer L5131) is present. The voltage at this point will take over the supply voltage at pin 13 of the IC.

If the take-over circuit does not function, the IC will switch off again at the minimal operating voltage of +8 V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

Secondary Voltage Sensing

The secondary voltage regulating circuit comprises of opto-coupler 7102 (which isolates the error signal from the control IC on the primary side), and a reference component 7201 (TL431).

The reference component has two functions:

- a very stable and accurate reference diode
- a high gain amplifier.

When the output voltage increases (due to a reduction in the load), the voltage across R3205+R3206 increases to above the internal reference voltage of 2.5 V. Item 7201 will conduct and the current through the opto-coupler will increase. This results in an increase of the voltage at pin 4 of 7101, which will reduce the on time of FET 7125. In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

Primary Current Sensing

The current through FET 7125, will result in a voltage drop across R3126/27/28 (R_{SENSE}). This line goes to pin 11 of 7101, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

Under-voltage Protection

If the supply voltage at pin 13 drops below 7.2 V (typical), e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 6 is disabled and the controller will switch off.

Over-voltage Protection

An internal over-voltage protection circuitry continuously monitors the V_{CC} pin.

If, after start-up, this voltage exceeds 40 V, the internal latch circuit is triggered, the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.

Note: If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

9.4 Loader/Monoboard

SD3.0 LOADER ASSY

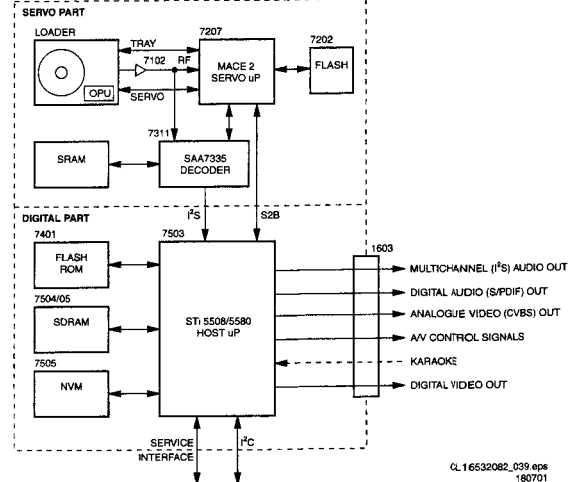


Figure 9-3

9.4.1 The Servo Part

The Optical Unit

The optical unit consists of two lasers, one for CD with a wavelength of 780 nm, and one for DVD with a wavelength of 650 nm. The TZA1033 (item 7102) controls the data from these lasers, and the supply to them.

The Signal Processor TZA1033

The TZA1033 (or DVDALAS2) is an analogue pre-processor and laser supply circuit. It contains data amplifiers and several options for radial tracking and focus control. It is possible to optimise the dynamic range of this pre-amp/processor combination for the LF servo and RF data paths. The gain in both channels is separately programmable. This will guarantee an optimal playability for all kind of discs. Also a dual laser supply is implemented, with fully automatic laser control including stabilisation and an ON/OFF switch, plus a separate supply pin for power efficiency. The servo signals go to the MACE2 servo processor, while the HF output signal, goes to the SAA7335 decoder (item 7311).

The Decoder SAA7335

The SAA7335 (item 7311) is a high-end combined Compact Disc (CD) and Digital Versatile Disc (DVD) compatible decoding device. The device operates with an external 32 KB SRAM for DVD error correction and de-interleaving operations.

This IC decodes EFM or EFM+HF signals directly from the laser pre-amplifier, including analogue front-end, PLL data recovery, demodulation and error correction.

The analogue front-end input converts the HF input to the digital domain via an 8-bit ADC, proceeded by an AGC circuit to obtain the optimum performance from the converter. An external resonator clocks this block. This subsystem recovers the data from the channel stream. It corrects asymmetry, performs noise filtering and equalisation and finally recovers the bit clock and data from the channel using a digital PLL.

The demodulator part detects the frame synchronisation signals and decodes the EFM (14 bit) and EFM+ (16 bit) data and sub-code words into 8 bit symbols. Via the serial output interface, the I2S data (audio and video) go to the DVD decoder STi5508.

The spindle-motor interface provides both motor control signals from the demodulator and, in addition, contains a tachometer loop that accepts tachometer pulses from the motor unit. They drive the motor IC (item 7304).

The SAA7335 has two independent microcontroller interfaces. The first is a serial I²C-bus and the second is a standard 8-bit multiplexed parallel interface. Both of these interfaces provide access to a total of 32 8-bit registers for control and status.

The Servo Processor MACE2

The servo circuit in the MACE2 IC (item 7207), takes care of the servo controls. In a CD system, there are some 12 control loops active. About six of them are needed to adjust the servo error signals, that is once per disc rotation. It also adjusts offsets, signal amplitudes and loop gains (AGCs), to enlarge system robustness and to avoid expensive potentiometer adjustments in production.

The other six loops determine the laser spot position on the disc in the radial, axial (focus) and tangential directions.

It also has to take care that the spot accesses a required position as fast as possible. This access system consists of two parts, namely the actuator and the sled, which are (within a certain range) mechanically and electrically independent. So during an access, the servo has to control as well the actuator as the sled.

The analogue signals from the diode pre-processor are converted into a digital representation using A/D converters. For the communication between the host processor (Sti5508) and the servo processor the S2B bus is used, this supports full-duplex asynchronous communication.

Note: For an extensive description of the MACE2 IC, see Service Manual 3122 785 11010.

9.4.2 The Digital Part

The Host Processor Sti5508/Sti5580

The Sti5508/Sti5580 host processor is the successor of the Sti5505. It works on 2.5 V and 3.3 V. The Sti5580 is the high-end version with DTS and DVD-audio capability. It comprises the following functions:

- video decoder which supports MPEG1 and MPEG2
- audio decoder which supports AC-3, MPEG1, MPEG2, PCM, DTS, DVD-audio, 6-channel, virtual surround
- PAL/NTSC video encoder with simultaneously Y/C, CVBS and RGB/YUV outputs
- PAL to NTSC and NTSC to PAL conversion
- the video encoder supports Closed Captioning (CC) and MacroVision 7
- full screen On Screen Display (OSD) generator
- on-chip PLLs to generate all necessary clocks (as reference the 27 MHz video clock is used). This is only available from Sti5508 cut 2.0 and above.

Input

Input data comes from the I²S-bus. The front-end interface of this device, accepts DVD, CD and CD-DA information.

Signal Processing

For video, the input data stream is decoded to the appropriate MPEG, Sub Picture and OSD data streams, after which they are fed to the PAL/NTSC encoder. This cell will convert the digital MPEG/Sub Picture/OSD stream into a standard base band signal and into RGB components. It handles interlaced and non-interlaced data, can perform CC/TXT encoding and allows MacroVision copy protection.

For audio, the processing cell is a fully compatible Dolby AC-3, MPEG1, MPEG2, PCM, DTS and DVD-audio decoder, capable of decoding 5.1 and 2 channel streams.

Note: DTS and DVD-audio are only available with Sti5580.

Output

For video, six analogue output pins are available on which CVBS, S-VHS (Y/C) and RGB/YUV signals are present. They go directly to the A/V board.

For audio, the Sti5508 has 3 PCM digital outputs (for 6-channel analogue audio):

- PCM_OUT0: left + right (on pin 14 of connector 1603).
- PCM_OUT1: Centre and LFE (on pin 6 of connector 1604).
- PCM_OUT2: left and right surround (on pin 4 of connector 1604).

Sampling frequencies of 96 kHz, 48 kHz, 44.1 kHz and 32 kHz are supported, and a down sampling filter (96 kHz/48 kHz) is available.

The I²S audio outputs of the Sti5508 go directly to the D/A converters (items 7500, 7502 and 7504) on the A/V board.

De-emphasis

In the 3rd generation player, the de-emphasis is done in the host processor (so not in the DACs on the A/V board). So there are no longer control lines foreseen to the A/V board. Therefore the 3rd generation mono board is not compatible with the first generation A/V board.

Memory

SDRAM

The size of the SDRAM is 2 times 16 Mb or 1 time 64 Mb (not simultaneously).

The SDRAM (items 7504 and 7505) has the following functions:

- it is used by the MPEG video decoder as a frame buffer
- it holds the software and the variables used by it.

Flash-ROM

A 2 Mb Flash-ROM (item 7401) holds the DVD firmware, and is controlled by pin 189 (FLASH_OEN) of the Sti5508/5580. It must be able to perform a download (by disk or DCU-link) in a Flash only system.

EEPROM

User settings, player settings and region code are stored in a 32 Kb I²C EEPROM. For high-end applications a 64 Kb version is used, which is pin compatible.

9.5 Data Processing

9.5.1 Digital Theatre Sound (DTS) Board (If Present)

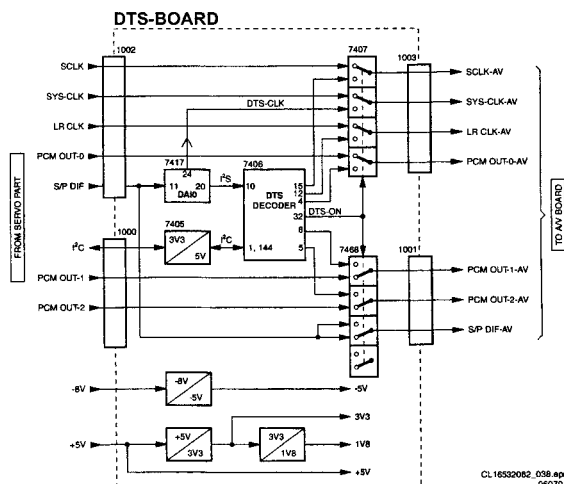


Figure 9-4

Some player models are DTS compatible. The DTS panel is then inserted between the Monoboard and the A/V board. You can split it up in three parts, which each are explained below.

Digital Video

The video data is not processed on this board, it goes directly to the A/V board.

Digital Audio Input Output (DAIO)

The AK4112A is a digital audio receiver (DIR) compatible with 96kHz, 24bits. It can automatically detect a Non-PCM bit

stream. This IC decodes the SPDIF signal to an I²S data stream. The output goes to the DTS decoder.

DTS Decoder

The DSP56366 (item 7406) is a Digital Signal Processor, used here as DTS decoder.

When the input data carries DTS information, the DTS_ON signal switches to high, and this will activate the two multiplex ICs 7407 and 7408. Now this data goes to the A/V board. In case it carries no DTS information, the PCM data from the Monoboard goes to the A/V board.

Output of the DTS decoder is an I²S data stream, which is present at the Enhanced Serial Audio Interface (ESAI) pins.

9.5.2 Audio/Video (A/V) and SCART Board

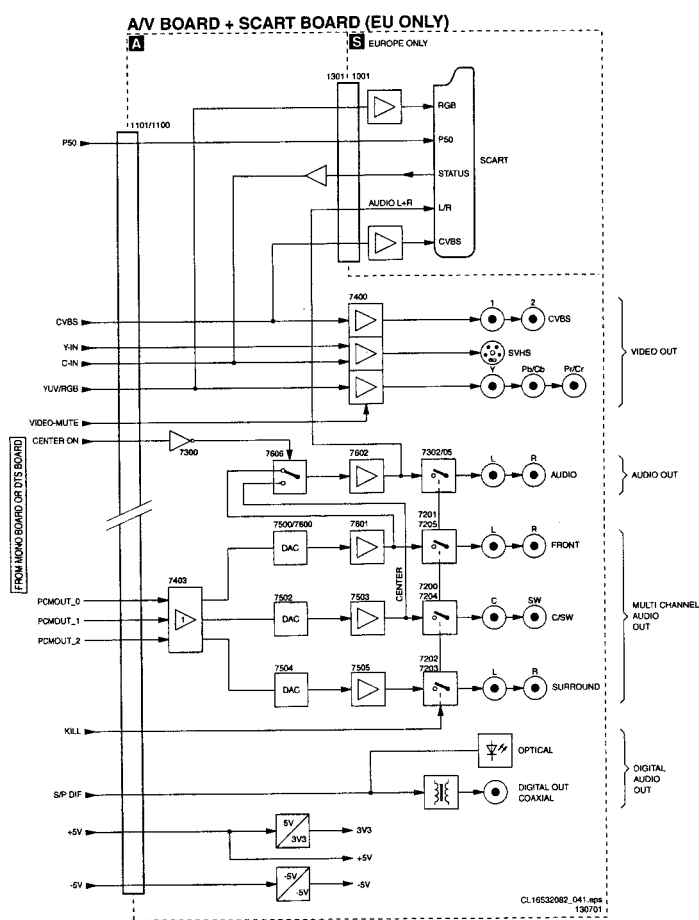


Figure 9-5

This board is the interface panel between the DVD-player and its peripherals.

Video

The analogue video signals from the Monoboard are fed to video buffer LA7109 (item 7400), and for Europe they also go to the SCART board (double SCART for DVD952). After amplification, they go directly to the VIDEO OUT cinch connectors.

Audio

The digital audio signals are fed to a buffer IC (7403, which is optional), followed by D/A converters.

The KILL signal, coming from the host processor Sti5508/Sti5580, mutes the audio outputs during STOP, NEXT and PREVIOUS commands.

9.5.3 Progressive Scan Board (If Present)

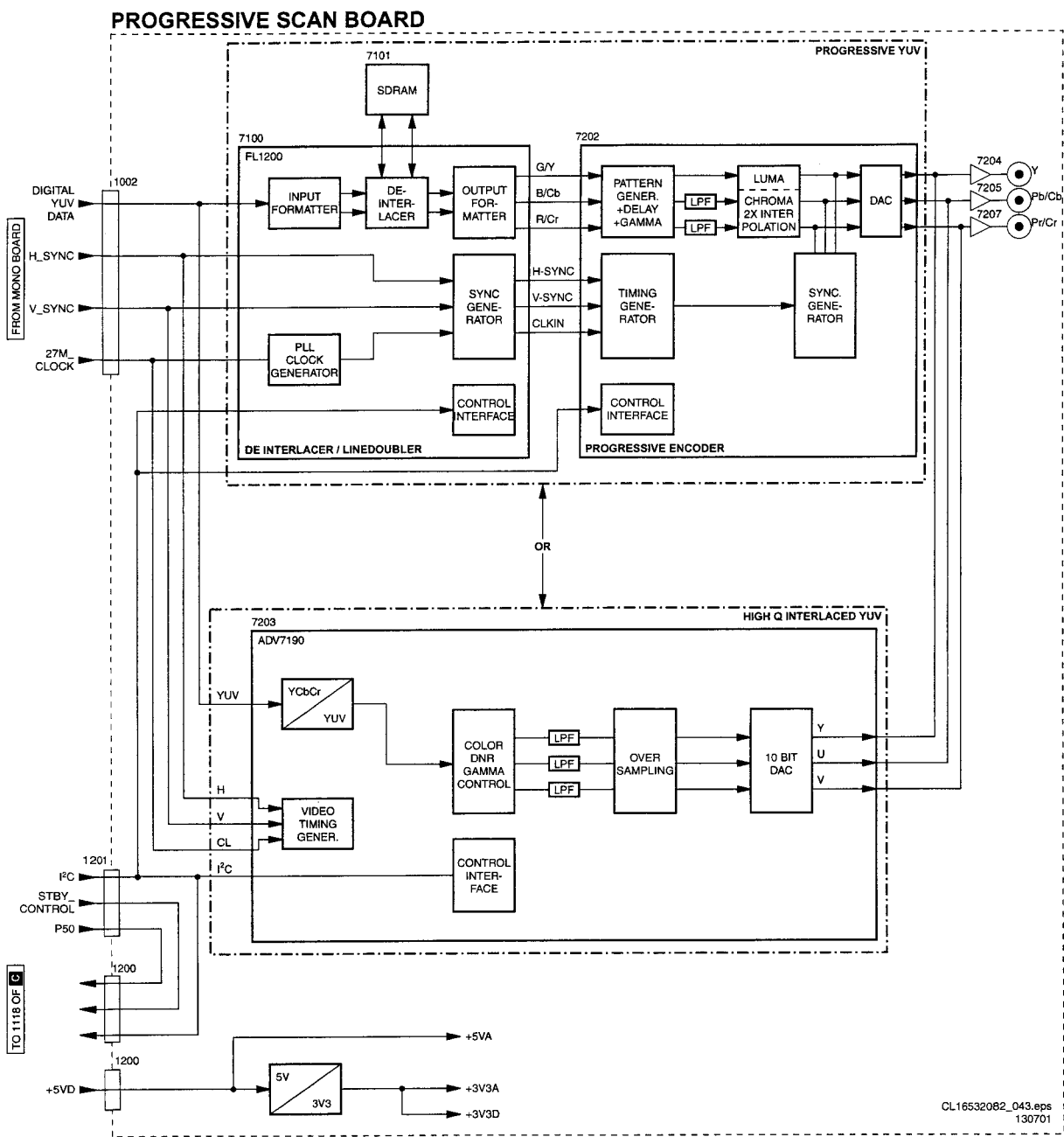


Figure 9-6

Some higher specified models offer progressive scan outputs. The Progressive Scan board consists of two separate circuits (not used together):

- Progressive YUV (for non-Europe versions).
- High Quality Interlaced YUV (for Europe).

Progressive YUV

This creates a picture signal with double the scan lines of a conventional interlaced picture, to create a noticeably sharper and smoother image. It offers higher picture resolution and eliminates virtually all motion artefacts. Even on large screens, the progressive scan lines are barely noticeable and it reduces picture flickering significant.

High Quality Interlaced YUV

This is still a conventional interlaced video, except that an integrated Digital Video Encoder (ADV7190) processes it. This IC encodes the eight bits digital YUV from the Monoboard, to output components YUV with improved

picture quality (reduce low amplitude and high frequency noise, SNR ratio).

Both have the Digital Crystal Clear feature, which allow you to fine-tune the following parameters:

- Gamma correction,
- Chroma and Luma delay.

9.6 Control and Display Panel

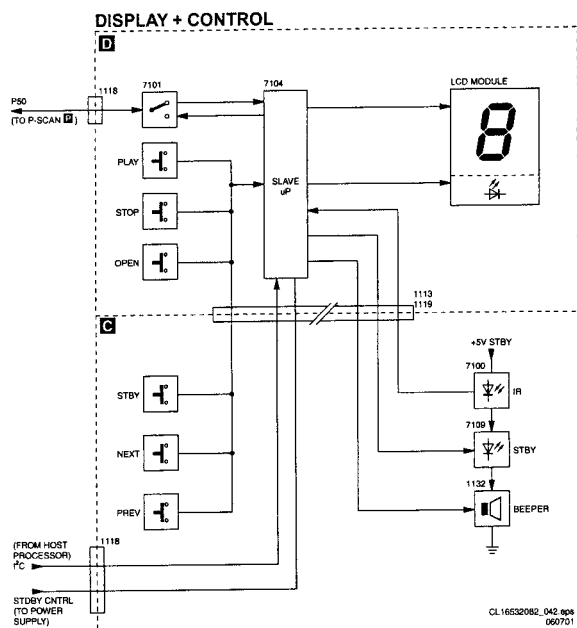


Figure 9-7

9.6.1 Control

Slave processor

The important component on this board is the (slave) microprocessor (item 7104). It works on an 8 MHz resonator (item 1110) and has a RESET circuit, which is triggered by the +5Vstby. After the RESET pulse, the STBY_CONTROL line will release the reset of the host microprocessor (on the Monoboard).

In addition, when going to Standby, the slave processor will reset the host processor. When the slave processor receives the correct IR (or key) code to leave the Standby mode, it resets the host processor.

Other slave processor functions are:

- generation of a scanning grid for the keys,
- generation of the display grid and segment scanning,
- generation of square signal to generate the filament voltage for FTD displays (when used),
- inputs for RC5/6 and P50 (P50 controller is build in).

Standby LED

Transistor 7109 drives the Standby LED. When the STBY_LED signal from the slave processor is 'high', the LED is 'off'.

Key Matrix

When a key on the local keyboard is pressed, the signal at the scanning pins of the microprocessor goes from +5 V to 0 V.

Jog Shuttle(if present)

Some models (e.g. DVD952) are equipped with a jog-shuttle (via connector 1114). This jog shuttle functions just like a tact switch and is read via I/O port 4 of the slave processor.

IR Receiver

The IR controller in the slave processor handles both RC5 and RC6 signals. The logic is +5 V for 'high' and 0 V for 'low'.

P50 Interface

P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. For European sets, this communication goes via pin 10 of the SCART

connector, while for other regions (when present), this is a cinch connector. The slave processor controls the P50 bus.

9.6.2 Display

LCD Module (for Q-models)

The LCD module needs a supply voltage of +3 V, which is derived from the +5Vdigital signal via a 3 V zenerdiode (item 6101). The logic is +3.3 V for 'high' and 0 V for 'low'. All the logic and supply lines go via connector 1114.

The backlight LED for the LCD module needs a supply voltage of +3.5 V (via connector 1112). Transistor 7107 drives the LED, while resistors 3103 and 3105 are used as voltage dropping components.

FTD Display (for other models)

Some models (e.g. DVD952) have an FTD instead of an LCD. The slave processor has an internal square signal generator (42 kHz), to generate the AC filament voltage. TS7105 and 7106 amplify the square signal before it is applied to the display. The necessary power supply of -26 V is derived from the -40 V signal via voltage regulator 7112.

9.7 Abbreviation list

ADC	Analogue to Digital Converter
AM	Amplitude Modulation
AP	Asia Pacific
AV	External Audio Video
BE	Basic Engine
B/G	Monochrome TV system. Sound carrier distance is 5.5MHz
BC_AUX	Blue/Chroma input from AUX SCART
BC_TV	Blue/Chroma output to TV SCART
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
ComPair	Computer aided rePair
CD-DA	CD Digital Audio
CS	Chip Select
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DAIO	Digital Audio Input Output
D/K	Monochrome TV system. Sound carrier distance is 6.5MHz
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EFM	Eight to Fourteen bit Modulation
EU	Europe
EXT	External (source), entering the set via SCART or Cinch
FBIN_AUX	Fast blanking input from AUX SCART
FBOUT_TV	Fast blanking output to TV SCART
FLASH	Flash memory
FM	Frequency Modulation
GIN_AUX	Green input from AUX SCART
GOUT_TV	Green output to TV SCART
HP	Headphone
I	Monochrome TV system. Sound carrier distance is 6.5MHz

I2C	Integrated IC bus	SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
I2S	Integrated IC Sound bus		
IF	Intermediate Frequency	SCL	Serial Clock I2C
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.	SCLK	Audio serial bit clock
		SDA	Serial Data I2C
		SDRAM	Synchronous DRAM
IR	Infra Red	SECAM	SEquence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
IRQ	Interrupt Request		
LATAM	Latin America	SLB_AUX	Slow blanking control signal from AUX SCART
LED	Light Emitting Diode	SLB_TV	Slow blanking control signal to TV SCART
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	S/PDIF	Sony Philips Digital InterFace
LIN_AUX	Audio input (left) from AUX SCART	SRAM	Static RAM
LIN_TV	Audio input (left) from TV SCART	STBY	Standby
LOUT_AUX	Audio output (left) to AUX SCART	SVHS	Super Video Home System
LOUT_TV	Audio output (left) to TV SCART	SW	Software
LPCM	Linear PCM	THD	Total Harmonic Distortion
LRCLK	Left/Right clock	TXT	Teletext
LS	Loudspeaker	µP	Microprocessor
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz	VCD	Video CD
MACE	Mini All Compact Disc Engine	VCR	Video Cassette Recorder
MPEG	Motion Pictures Experts Group	Y/C	Luminance (Y) and Chrominance (C) signal
NC	Not Connected		
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.	YUV	Component video
		0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)		
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments		
OC	Open Circuit		
OPU	Optical Pick up Unit		
OSD	On Screen Display		
P50	Project 50 or Easy Link		
PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)		
PCB	Printed Circuit Board		
PCM	Pulse Code Modulation		
PCM_CLK	Audio system clock for DAC		
PCM_OUTx	Audio serial output data		
PIP	Picture In Picture		
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency		
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.		
RAM	Random Access Memory		
RC	Remote Control handset		
RC5	Remote Control system 5, signal from the remote control receiver		
RGB	Red Green Blue		
RIN_AUX	Red input from AUX SCART		
ROUT_TV	Red output to TV SCART		
ROM	Read Only Memory		
S2B	Serial to Basic, communication bus between host- and servo processor		
SAP	Second Audio Program		

10. Spare Parts List

Q40 /OX1 Mech.

Various

0001	3139 247 54182	FRONT COMPLETE Q40 EUR
0002	3139 247 51831	BADGE PHILIPS ASSY SILVER
0005	3139 247 54001	FRONT PLA Q40 EUR PNT PRT
0020	3139 247 53761	WINDOW Q40 US PNT PRT
0030	3139 247 54021	BUTTON L Q40 EUR PNT PRT
0035	3139 247 54031	BUTTON R Q40 EUR PNT PRT
0055	3139 247 54291	ASSY TRAY COVER DVD Q40
0250	3139 247 54041	PLATE BACK Q40 EUR PNT PRT
0300	3139 247 54081	COVER TOP Q40 EUR PNT PRT
0350	3139 228 87712	PROD.ASSY RC19237002/01 PACKED
0360▲	2422 070 98133	MAINSKORD EUR 1M5 BK B
0360▲	4822 321 10713	MAINSKORD 300V EUR 1M5 BK B (FOR /051 ONLY)
0365	3103 308 92610	CABLE AUDIO 2X2RCA MALE 1.5MTR
0366	4822 321 61579	VIDEO-CABLE
0372	3111 170 21992	SCART CABLE (L=1.10M) BMS
0375	3139 246 11251	IFU DVD Q40/05X
0375	3139 246 11221	IFU DVD Q40/001 /021
1101	3104 157 11200	CWAS FLEX DVD 16 130 32S
1102	3104 157 11190	CWAS FLEX DVD 22 130 32S
1108	3139 110 35821	FFC 08P/209/08P BD 1MMP FOLDED
1111	3104 157 11200	CWAS FLEX DVD 16 130 32S
1112	3104 157 11190	CWAS FLEX DVD 22 130 32S
1113	3104 157 11190	CWAS FLEX DVD 22 130 32S
1117	3139 110 35831	FFC 08P/241/08P BD 1MMP FOLDED

AV PWB DVDQ40 /OX1

Various

1100	2422 025 16525	CON BM V 16P F 1.00 FFC 0.3 R
1101	4822 265 11154	52030-2210 (22P)
1301	4822 265 11154	52030-2210 (22P)
1400	2422 026 05088	CON BM CINCH H 6P F B
1401	2422 026 05189	CON BM CINCH H 4P F YEWHRD B
1402	2422 026 05188	CON BM MDIN H 3P F TCS7927 B
1403	2422 026 05191	CON BM CINCH H 3P F RDBUGN B
1404	4822 267 31626	

—II—

2100	4822 126 14305	100nF 10% 16V 0603
2101	4822 124 40184	1000µF 20% 10V
2102	4822 126 14305	100nF 10% 16V 0603
2103	4822 124 40184	1000µF 20% 10V
2104	4822 124 40207	100µF 20% 25V
2105	4822 126 14305	100nF 10% 16V 0603
2106	4822 124 40207	100µF 20% 25V
2107	3198 017 44740	0603 10V 470nF COL
2109	4822 124 40207	100µF 20% 25V
2110	4822 126 14305	100nF 10% 16V 0603
2111	4822 124 23052	100µF 20% 16V
2113	4822 126 13883	220pF 5% 50V
2114	4822 126 13883	220pF 5% 50V
2115	4822 126 13883	220pF 5% 50V
2116	4822 126 13883	220pF 5% 50V
2117	4822 124 23052	100µF 20% 16V

2118	4822 124 21732	10µF 20% 25V
2119	3198 017 44740	0603 10V 470nF COL
2120	4822 126 14305	100nF 10% 16V 0603
2121	4822 124 11947	10µF 20% 16V
2122	4822 122 33777	47pF 5% 63V
2123	4822 126 14305	100nF 10% 16V 0603
2124	4822 122 33777	47pF 5% 63V
2125	4822 126 13883	220pF 5% 50V
2126	4822 126 13883	220pF 5% 50V
2127	4822 126 13883	220pF 5% 50V
2130	4822 124 41584	100µF 20% 10V
2202	4822 124 80231	47µF 20% 16V
2203	4822 124 80231	47µF 20% 16V
2204	4822 124 80231	47µF 20% 16V
2209	4822 124 11947	10µF 20% 16V
2210	4822 124 11947	10µF 20% 16V
2211	4822 124 11947	10µF 20% 16V
2212	4822 124 11947	10µF 20% 16V
2213	4822 124 11947	10µF 20% 16V
2214	4822 124 11947	10µF 20% 16V
2215	4822 126 14305	100nF 10% 16V 0603
2216	4822 126 14305	100nF 10% 16V 0603
2217	4822 126 14305	100nF 10% 16V 0603
2218	4822 126 14305	100nF 10% 16V 0603
2219	4822 126 14305	100nF 10% 16V 0603
2220	4822 126 14305	100nF 10% 16V 0603
2221	4822 126 14305	100nF 10% 16V 0603
2222	4822 126 14305	100nF 10% 16V 0603
2223	4822 126 14305	100nF 10% 16V 0603
2224	4822 122 31765	100pF 2% 63V
2225	4822 122 31765	100pF 2% 63V
2227	4822 122 31765	100pF 2% 63V
2228	4822 122 31765	100pF 2% 63V
2230	4822 126 14305	100nF 10% 16V 0603
2231	4822 126 14305	100nF 10% 16V 0603
2234	4822 126 14305	100nF 10% 16V 0603
2235	4822 126 14305	100nF 10% 16V 0603
2238	4822 124 40207	100µF 20% 25V
2239	4822 124 40207	100µF 20% 25V
2240	4822 124 40207	100µF 20% 25V
2242	4822 124 40207	100µF 20% 25V
2243	3198 016 31020	0603 25V 1nF
2245	3198 016 31020	0603 25V 1nF
2246	3198 016 31020	0603 25V 1nF
2247	3198 016 31020	0603 25V 1nF
2248	3198 016 31020	0603 25V 1nF
2249	3198 016 31020	0603 25V 1nF
2251	4822 122 33761	22pF 5% 50V
2308	4822 126 14305	100nF 10% 16V 0603
2311	4822 124 22339	100UE 16V
2312	4822 126 14305	100nF 10% 16V 0603
2314	4822 122 31765	100pF 2% 63V
2316	3198 016 31020	0603 25V 1nF
2321	4822 124 22339	100UE 16V
2324	4822 122 31765	100pF 2% 63V
2327	3198 016 31020	0603 25V 1nF
2328	4822 126 14305	100nF 10% 16V 0603
2329	4822 126 14305	100nF 10% 16V 0603
2330	4822 124 41584	100µF 20% 10V
2331	4822 124 41584	100µF 20% 10V
2335	4822 126 14305	100nF 10% 16V 0603
2336	4822 126 14305	100nF 10% 16V 0603
2337	4822 126 14305	100nF 10% 16V 0603
2338	4822 126 14305	100nF 10% 16V 0603



3100	4822 117 11152	4Ω7 5%
3101	4822 117 11152	4Ω7 5%
3102	4822 051 30759	75Ω 5% 0.062W
3103	4822 051 30759	75Ω 5% 0.062W
3104	4822 051 30759	75Ω 5% 0.062W
3105	4822 117 11152	4Ω7 5%
3106	4822 051 30759	75Ω 5% 0.062W
3108	4822 051 30759	75Ω 5% 0.062W
3109	4822 051 30223	22k 5% 0.062W
3110	4822 051 30222	2k2 5% 0.062W
3111	4822 117 12902	8k2 1% 0.063W 0603
3112	4822 051 30759	75Ω 5% 0.062W
3113	4822 051 30223	22k 5% 0.062W
3114	4822 051 30759	75Ω 5% 0.062W
3115	4822 051 30153	15k 5% 0.062W
3116	4822 051 30103	10k 5% 0.062W
3118	4822 117 11152	4Ω7 5%
3120	4822 051 30101	100Ω 5% 0.062W
3121	4822 051 30101	100Ω 5% 0.062W
3122	4822 051 30689	68Ω 5% 0.063W 0603
3200	4822 051 30479	47Ω 5% 0.062W

3201	4822 051 30479	47Ω 5% 0.062W
3202	4822 051 30479	47Ω 5% 0.062W
3204	4822 117 12902	8k2 1% 0.063W 0603
3205	4822 117 12902	8k2 1% 0.063W 0603
3206	4822 051 30103	10k 5% 0.062W
3208	4822 051 30103	10k 5% 0.062W
3209	4822 051 30472	4k7 5% 0.062W
3210	4822 051 30472	4k7 5% 0.062W
3212	4822 051 30472	4k7 5% 0.062W
3213	4822 051 30472	4k7 5% 0.062W
3216	4822 051 30103	10k 5% 0.062W
3217	4822 117 12902	8k2 1% 0.063W 0603
3219	4822 051 30103	10k 5% 0.062W
3220	4822 051 30272	2k7 5% 0.062W
3221	4822 051 30272	2k7 5% 0.062W
3222	4822 051 30272	2k7 5% 0.062W
3223	4822 051 30471	470Ω 5% 0.062W
3224	4822 051 30471	470Ω 5% 0.062W
3225	4822 051 30471	470Ω 5% 0.062W
3226	4822 117 12902	8k2 1% 0.063W 0603
3227	4822 051 30471	470Ω 5% 0.062W
3228	4822 051 30471	470Ω 5% 0.062W
3229	4822 051 30471	470Ω 5% 0.062W
3230	4822 051 30272	2k7 5% 0.062W
3231	4822 051 30272	2k7 5% 0.062W
3232	4822 051 30272	2k7 5% 0.062W
3233	4822 051 30103	10k 5% 0.062W
3234	4822 051 30103	10k 5% 0.062W
3235	4822 051 30103	10k 5% 0.062W
3236	4822 051 30103	10k 5% 0.062W
3237	4822 051 30103	10k 5% 0.062W
3238	4822 051 30103	10k 5% 0.062W
3301	4822 051 30008	0Ω jumper
3302	4822 051 30471	470Ω 5% 0.062W
3303	4822 117 13632	100k 1% 0.063 0.62W
3304	4822 051 30272	2k7 5% 0.062W
3309	4822 051 30008	0Ω jumper
3311	4822 117 12902	8k2 1% 0.063W 0603
3314	4822 051 30103	10k 5% 0.062W
3319	4822 051 30008	0Ω jumper
3321	4822 051 30471	470Ω 5% 0.062W
3322	4822 117 13632	100k 1% 0.063 0.62W
3323	4822 051 30272	2k7 5% 0.062W
3325	4822 051 30008	0Ω jumper
3328	4822 117 12902	8k2 1% 0.063W 0603
3331	4822 051 30103	10k 5% 0.062W
3334	4822 051 30472	4k7 5% 0.062W
3335	4822 051 30272	2k7 5% 0.062W
3336	4822 051 30472	4k7 5% 0.062W
3337	4822 051 30472	4k7 5% 0.062W

5103 4822 157 70601 100µH (921927085A)



7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25
7202	4822 130 42804	BC817-25
7203	4822 130 42804	BC817-25
7204	4822 130 42804	BC817-25
7205	4822 130 42804	BC817-25
7300	4822 130 60511	BC847B
7302	4822 130 42804	BC817-25
7305	4822 130 42804	BC817-25
7400	9322 165 60668	IC SM LA7109 (TSAJ) R
7401	4822 209 16978	LF33CV
7402	4822 130 10845	GP1F32T
7500	9352 640 74118	IC SM UD1334TS/NI (PHSE) R
7502	9352 640 74118	IC SM UD1334TS/NI (PHSE) R
7503	4822 209 30095	LM833D
7504	9352 640 74118	IC SM UD1334TS/NI (PHSE) R
7505	4822 209 30095	LM833D
7601	4822 209 30095	LM833D
7602	4822 209 30095	LM833D
7605	4822 209 30095	LM833D
7606	5322 209 14481	HEF4053T

Front PWB DVDQ40-50 /0X1

Various

1100	4822 276 13775	SWITCH
1101	4822 276 13775	SWITCH
1102	4822 276 13775	SWITCH
1103	4822 276 13775	SWITCH
1104	4822 276 13775	SWITCH
1105	3139 248 70791	LCD MODULE WD-G0504V-7WLWA WTK
1110	2422 540 98518	RES CER 8MHz CSTS*MHz 03 A
1111	4822 276 13775	SWITCH
1113	2422 025 16393	CON BM V 8P F 1.00 FFC 0.3 B
1114	2422 025 16393	CON BM V 8P F 1.00 FFC 0.3 B
1115	4822 267 10565	4P
1116	2422 025 16393	CON BM V 8P F 1.00 FFC 0.3 B
1117	2422 025 16393	CON BM V 8P F 1.00 FFC 0.3 B
1118	2422 025 08149	CON BM V 6P M 2.00 PH B (FOR DVDQ50 ONLY)
1118	4822 267 10637	B5B-PH-K (5P)
1119	2422 025 16393	CON BM V 8P F 1.00 FFC 0.3 B
1132	2422 527 01005	BUZZER PIEZO PKM13EPY-4002 Y

—II—

2100	4822 126 13883	220pF 5% 50V
2101	4822 126 13883	220pF 5% 50V
2102	4822 124 40769	4.7μF 20% 100V
2104	4822 124 23052	100μF 20% 16V
2105	4822 126 14549	33nF 16V O6O3
2106	4822 124 23052	100μF 20% 16V
2114	4822 122 33761	22pF 5% 50V
2115	4822 122 33761	22pF 5% 50V
2128	5322 126 11578	1nF 10% 50V 0603
2129	4822 124 11947	10μF 20% 16V
2201	4822 126 14549	33nF 16V O6O3
2202	4822 126 14549	33nF 16V O6O3
2203	5322 126 11578	1nF 10% 50V 0603

—□—

3100	4822 051 30223	22k 5% 0.062W
3101	4822 051 30273	27k 5% 0.062W
3102	4822 117 12925	47k 1% 0.063W 0603
3103	4822 051 30109	10Ω 5% 0.062W
3104	4822 117 13632	100k 1% 0603 0.62W
3105	4822 051 30109	10Ω 5% 0.062W
3106	4822 051 30221	220Ω 5% 0.062W
3109	4822 051 30472	4k7 5% 0.062W
3110	4822 051 30472	4k7 5% 0.062W
3112	4822 051 30472	4k7 5% 0.062W
3113	4822 051 30472	4k7 5% 0.062W
3114	4822 051 30472	4k7 5% 0.062W
3115	4822 051 30472	4k7 5% 0.062W
3116	4822 051 30472	4k7 5% 0.062W
3121	4822 051 30472	4k7 5% 0.062W
3122	4822 051 30109	10Ω 5% 0.062W
3125	4822 051 30109	10Ω 5% 0.062W
3130	4822 051 30109	10Ω 5% 0.062W
3133	4822 051 30109	10Ω 5% 0.062W
3135	4822 051 30331	330Ω 5% 0.062W
3136	4822 051 30102	1k 5% 0.062W
3137	4822 051 30103	10k 5% 0.062W
3140	4822 051 30103	10k 5% 0.062W
3141	4822 051 30103	10k 5% 0.062W
3142	4822 051 30331	330Ω 5% 0.062W
3144	4822 117 13632	100k 1% 0603 0.62W
3150	4822 051 30472	4k7 5% 0.062W
3151	4822 051 30472	4k7 5% 0.062W
3152	4822 051 30472	4k7 5% 0.062W
3160	4822 051 30332	3k3 5% 0.062W
3161	4822 051 30332	3k3 5% 0.062W
3162	4822 051 30332	3k3 5% 0.062W
3163	4822 051 30332	3k3 5% 0.062W
3164	4822 051 30332	3k3 5% 0.062W
3170	4822 051 30103	10k 5% 0.062W
3171	4822 051 30103	10k 5% 0.062W
3174	4822 051 30472	4k7 5% 0.062W
3175	4822 051 30181	180Ω 5% 0.062W
3177	4822 051 30472	4k7 5% 0.062W

→←

6100	4822 130 11397	BAS316
6101	9340 385 50115	DIO REG SM BZX284- C3V0 (PHSE)R
6104	4822 130 11397	BAS316
6200	9322 171 67682	LED VS LTL-2R7TWK (LITO) B

—□—

7100	9322 155 22667	
7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7104	3139 240 50161	IC SM TMP87CM48DF 3ER6
7107	5322 130 60845	BC807-25
7108	4822 130 60511	BC847B
7109	4822 130 60373	BC856B
7110	4822 130 42804	BC817-25

DTS PWB DVDQ40-50 /0X1

Various

1000	2422 025 16525	CON BM V 16P F 1.00 FFC 0.3 R
1001	2422 025 16525	CON BM V 16P F 1.00 FFC 0.3 R
1002	4822 265 11154	52030-2210 (22P)
1003	4822 265 11154	52030-2210 (22P)
1012	2422 543 01207	12MHz 2880 20P AT-49 A

—II—

2003	4822 124 40207	100μF 20% 25V
2030	4822 126 14549	33nF 16V O6O3
2031	3198 017 34730	0603 16V 47nF COL
2032	4822 124 40207	100μF 20% 25V
2033	4822 124 40207	100μF 20% 25V
2034	4822 126 14305	100nF 10% 16V 0603
2035	3198 016 31020	0603 25V 1nF
2036	4822 124 81286	47μF 20% 16V
2037	4822 126 14305	100nF 10% 16V 0603
2038	4822 126 14305	100nF 10% 16V 0603
2039	4822 126 14305	100nF 10% 16V 0603
2040	4822 126 14305	100nF 10% 16V 0603
2042	4822 124 40433	47μF 20% 25V
2043	4822 126 14305	100nF 10% 16V 0603
2044	4822 126 14305	100nF 10% 16V 0603
2045	4822 126 14305	100nF 10% 16V 0603
2046	4822 124 81286	47μF 20% 16V 0603
2047	4822 126 14305	100nF 10% 16V 0603
2048	4822 126 14305	100nF 10% 16V 0603
2049	4822 126 14305	100nF 10% 16V 0603
2050	4822 126 14305	100nF 10% 16V 0603
2051	4822 126 14305	100nF 10% 16V 0603
2052	4822 126 14305	100nF 10% 16V 0603
2053	4822 126 14305	100nF 10% 16V 0603
2054	4822 126 14305	100nF 10% 16V 0603
2055	4822 126 14305	100nF 10% 16V 0603
2056	4822 126 14305	100nF 10% 16V 0603
2057	4822 126 14305	100nF 10% 16V 0603
2058	4822 126 14305	100nF 10% 16V 0603
2059	4822 124 11947	10μF 20% 16V
2060	4822 124 40433	47μF 20% 25V
2062	4822 126 14494	22nF 10% 25V 0603
2063	4822 126 14494	22nF 10% 25V 0603
2064	4822 122 33777	47pF 5% 63V
2065	4822 122 33777	47pF 5% 63V
2066	4822 122 33777	47pF 5% 63V
2067	4822 122 33777	47pF 5% 63V
2068	4822 122 33777	47pF 5% 63V
2069	4822 122 33777	47pF 5% 63V
2071	4822 122 33741	10pF 10% 50V
2072	4822 122 33741	10pF 10% 50V
2115	4822 126 14305	100nF 10% 16V 0603
2116	4822 124 11947	10μF 20% 16V
2118	4822 124 11947	10μF 20% 16V
2119	4822 126 14305	100nF 10% 16V 0603
2120	4822 126 14305	100nF 10% 16V 0603
2121	4822 124 11947	10μF 20% 16V
2122	4822 126 14507	18pF 5% 50V 0603
2124	5322 126 11583	10nF 10% 50V 0603

—□—

3072	4822 051 30103	10k 5% 0.062W
3073	4822 051 30103	10k 5% 0.062W

3074	4822 051 30103	10k 5% 0.062W
3075	4822 051 30103	10k 5% 0.062W
3076	4822 051 30103	10k 5% 0.062W
3077	4822 051 30103	10k 5% 0.062W
3078	4822 051 30103	10k 5% 0.062W
3079	4822 051 30103	10k 5% 0.062W
3080	4822 051 30103	10k 5% 0.062W
3081	4822 117 12925	47k 1% 0.063W 0603
3086	4822 051 30102	1k 5% 0.062W
3092	4822 051 30101	100Ω 5% 0.062W
3096	4822 051 30103	10k 5% 0.062W
3098	4822 051 30103	10k 5% 0.062W
3100	4822 117 12139	22Ω 5% 0.062W
3104	4822 051 30101	100Ω 5% 0.062W
3105	4822 051 30101	100Ω 5% 0.062W
3108	4822 051 30101	100Ω 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3110	4822 051 30101	100Ω 5% 0.062W
3112	4822 051 30103	10k 5% 0.062W
3113	4822 051 30101	100Ω 5% 0.062W
3114	4822 051 30101	100Ω 5% 0.062W
3115	4822 051 30103	10k 5% 0.062W
3116	4822 051 30101	100Ω 5% 0.062W
3117	4822 051 30103	10k 5% 0.062W
3118	4822 051 30101	100Ω 5% 0.062W
3119	4822 051 30101	100Ω 5% 0.062W
3120	4822 117 12925	47k 1% 0.063W 0603
3145	4822 051 30101	100Ω 5% 0.062W
3146	4822 051 30101	100Ω 5% 0.062W
3147	4822 051 30101	100Ω 5% 0.062W
3150	4822 051 30101	100Ω 5% 0.062W
3151	4822 051 30101	100Ω 5% 0.062W
3152	4822 051 30101	100Ω 5% 0.062W
3154	4822 051 30101	100Ω 5% 0.062W
3155	4822 051 30101	100Ω 5% 0.062W
3156	4822 051 30101	100Ω 5% 0.062W
3157	4822 051 30101	100Ω 5% 0.062W
3174	4822 051 30102	1k 5% 0.062W
3176	4822 051 30102	1k 5% 0.062W
3177	4822 051 30101	100Ω 5% 0.062W
3178	4822 051 30183	18k 5% 0.062W
3179	4822 051 30101	100Ω 5% 0.062W
3180	4822 051 30101	100Ω 5% 0.062W
3182	4822 051 30102	1k 5% 0.062W
3183	4822 051 30101	100Ω 5% 0.062W
3187	4822 051 30105	1M 5% 0.062W
3188	4822 051 30103	10k 5% 0.062W
3189	4822 051 30101	100Ω 5% 0.062W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

—□—

5003	4822 157 71304	1μH
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7406	9322 159 99671	XCD56366PV120
7407	9322 077 40668	MC74F157AD
7408	9322 077 40668	MC74F157AD
7409	4822 209 17398	LD1117DT33
7417	9322 159 98668	AK4112AVF
7418	9352 611 78118	74HC1GU04GW

Single SCART DVDQ40-50 /0X1

Various

1001	4822 265 11154	52030-2210 (22P)
1002	2422 025 12352	CON BM EURO H 21P F BK GRND-L

—II—

2100	4822 124 40207	100μF 20% 25V
2101	4822 126 14305	100nF 10% 16V 0603
2102	4822 126 13883	220pF 5% 50V
2103	4822 126 13883	220pF 5% 50V
2104	4822 126 13883	220pF 5% 50V
2105	4822 122 31765	100pF 2% 63V
2106	4822 126 14305	100nF 10% 16V 0603
2107	4822 124 40207	100μF 20% 25V
2108	4822 126 14305	100nF 10% 16V 0603
2109	4822 124 40207	100μF 20% 25V
2110	4822 124 40207	100μF 20% 25V
2111	4822 126 14305	100nF 10% 16V 0603
2112	4822 126 13883	220pF 5% 50V
2113	4822 126 13883	220pF 5% 50V
2114	4822 126 13883	220pF 5% 50V
2115	4822 126 13883	220pF 5% 50V

2116	4822 126 13883	220pF 5% 50V
2117	4822 126 14305	100nF 10% 16V 0603



3100	4822 051 30272	2k7 5% 0.062W
3101	4822 051 30221	220Ω 5% 0.062W
3102	4822 116 83872	220Ω 5% 0.5W
3103	4822 051 30272	2k7 5% 0.062W
3104	4822 051 30759	75Ω 5% 0.062W
3105	4822 051 30759	75Ω 5% 0.062W
3106	4822 051 30759	75Ω 5% 0.062W
3107	4822 051 30759	75Ω 5% 0.062W
3108	4822 051 30759	75Ω 5% 0.062W
3109	4822 051 30223	22k 5% 0.062W
3110	4822 051 30221	220Ω 5% 0.062W
3111	4822 051 30102	1k 5% 0.062W
3112	4822 117 12925	47k 1% 0.063W 0603
3113	4822 117 12925	47k 1% 0.063W 0603
3114	4822 117 12925	47k 1% 0.063W 0603
3115	4822 051 30472	4k7 5% 0.062W



6100	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6101	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6102	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6103	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6104	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6105	9340 548 63115	DIO REG SM PDZ15B (PHSE) R
6106	9340 548 63115	DIO REG SM PDZ15B (PHSE) R



7100	9322 165 60668	IC SM LA7109 (TSAJ) R
7401	4822 130 60511	BC847B
7402	4822 130 60511	BC847B
7403	4822 130 60373	BC856B
7404	4822 130 60511	BC847B
7405	4822 130 60373	BC856B
7406	4822 130 60511	BC847B

PSU PWB DVDQ40-50 /0X1**Various**

0102▲	2422 030 00304	SOC SUPP AC HOR MALE 9452 B
0120▲	4822 265 11253	FUSE HOLDER 2P
0205	2422 025 08333	CON BM V 12P M 2.50 EH B
0206	2422 025 11244	CON BM V 07P M 2.50 EH B
0208	4822 267 10565	4P
1120▲	4822 253 30383	19181 (2.5A)



2102	4822 124 81151	22μF 50V
2106▲	4822 121 10711	100nF 20% 275V
2107	5322 126 10511	1nF 5% 50V
2108	4822 126 13694	68pF 1% 63V
2113	5322 122 32654	63V 22nF PM10 R
2121	2222 151 90054	EL 151 400V S 100μF
2122	4822 121 70141	33nF 5% 400V
2127	4822 126 12263	220pF (10%) 1KV
2130▲	4822 126 13841	1nF 20% 250V
2131▲	4822 126 13841	1nF 20% 250V
2201	4822 126 14585	100nF 10% 50V
2211	4822 124 41545	220μF 20% 16V
2212	4822 126 14585	100nF 10% 50V
2219	2020 021 91493	470μF 20% 25V
2220	2020 021 91636	EL YXF 35V S 1000F PM20 B (FOR DVDQ50 ONLY)
2221	4822 124 41545	220μF 20% 16V
2223	4822 126 14585	100nF 10% 50V
2225	4822 124 81021	100μF 20% 16V
2230	2020 012 93728	EL YK 10V S 2200μF PM20 B
2231	4822 124 81021	100μF 20% 16V
2240	4822 124 41545	220μF 20% 16V
2241	4822 124 81021	100μF 20% 16V
2242	4822 126 14585	100nF 10% 50V

2250	4822 124 81151	22μF 50V
2260	4822 124 81147	470μF 20% YK 25V
2261	4822 126 14585	100nF 10% 50V
2263	4822 124 40207	100μF 20% 25V
2264	4822 126 14585	100nF 10% 50V
2299	5322 122 32654	63V 22nF PM10 R



3102	4822 116 52182	15Ω 5% 0.5W
3103	4822 117 11449	2k2 5% 0.1W 0805
3104	4822 051 20339	33Ω 5% 0.1W
3105	4822 116 52219	330Ω 5% 0.5W
3108	4822 051 20223	22k 5% 0.1W
3110	4822 051 20472	4k7 5% 0.1W
3112	4822 051 20223	22k 5% 0.1W
3113	4822 051 20332	3k3 5% 0.1W
3116▲	4822 052 10102	1k 5% 0.33W
3120▲	2122 550 00147	VDR DC 1M A/423V S MAX 775V B
3121	4822 117 12181	470Ω 20% 0.5W
3122	4822 117 13515	2Ω 7 3W AC03 WW
3125	4822 051 20472	4k7 5% 0.1W
3126	4822 116 80676	1Ω 5% 0.5W
3127	4822 116 80676	1Ω 5% 0.5W
3128	4822 116 80176	1Ω 5% 0.5W
3130▲	4822 053 21106	10M 5% 0.5W
3201	4822 116 52226	560Ω 5% 0.5W
3202	4822 117 11142	2k4 1% 0.1W
3203	4822 051 20479	47Ω 5% 0.1W
3204	4822 117 11504	270Ω 1% 0.1W
3205	4822 117 11144	3k9 1% 0.1W
3206	5322 117 12487	1k RC12G 1% 0.125W
3207	4822 051 20391	390Ω 5% 0.1W
3208	4822 117 11503	220Ω 1% 0.1W
3209	4822 117 12955	2k7 1% 0.1W 0805
3220	4822 051 20102	1k 5% 0.1W
3231	4822 051 20102	1k 5% 0.1W
3242	4822 051 20472	4k7 5% 0.1W
3243	4822 117 10837	100k 1% 0.1W
3260	4822 051 20102	1k 5% 0.1W
3262	4822 117 10833	10k 1% 0.1W
3263	4822 117 11148	56k 1% 0.1W
3276	4822 117 10834	47k 1% 0.1W



5121▲	4822 157 53348	TER CHOKE ASSY CU15D3
5131▲	4822 146 10402	TRAFO CT395FANF/PVF
5210	2422 535 94638	IND FXD LHL08 S 6U8 PM20 A
5220	2422 535 94638	IND FXD LHL08 S 6U8 PM20 A
5230	2422 535 94638	IND FXD LHL08 S 6U8 PM20 A
5250	4822 157 11517	10μH 5% 2.3X3.4
5260	2422 535 94638	IND FXD LHL08 S 6U8 PM20 A



6102	4822 130 42488	BYD33D
6103	4822 130 30621	1N4148
6106	4822 130 83757	BAS216
6112	4822 130 31603	1N4006
6113	4822 130 31603	1N4006
6114	4822 130 31603	1N4006
6115	4822 130 31603	1N4006
6122	4822 130 34281	BZX79-B15
6123	4822 130 34281	BZX79-B15
6127	5322 130 34574	1N4004G
6128	5322 130 34574	1N4004G
6201	4822 130 10794	BZX284-C10
6202	4822 130 83757	BAS216
6221	4822 130 11596	BYW29EX-200
6230	9322 161 78682	DIO REC SB360L-7024 (GI00) B
6240	4822 130 42488	BYD33D
6250	4822 130 42606	BYD33J
6260	9340 559 53112	DIO REC BYW95C-24 (PHSE) B
6261	5322 130 34574	1N4004G



7101	9322 164 16682	IC TY72011P2 (ONSE) L
7102▲	9322 149 04682	OPT CP TCET1102(G) (VISH) L
7125	9322 157 37687	FET POW STP3NC60FP (ST00) L

7201	4822 209 81397	TL431CLPST
7221	9322 163 53685	FET POW SM IRLML2502 (INR0) R
7231	9322 163 53685	FET POW SM IRLML2502 (INR0) R
7240	4822 130 40855	BC337
7241	4822 130 60373	BC856B
7249	4822 209 11079	LM79M05CT (NATIONAL)
7263	4822 130 60511	BC847B

VAL6011 DVDQ40-50 /0X1**Various**

0001	9305 023 61101	VAL6011/01
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Q50 /0X1 MECH**Various**

0001	3139 247 53591	FRONT COMPLETE Q50
0005	3139 247 53991	FRONT AL Q50 EUR PNT PRT
0010	3139 247 53671	FRONT PLA Q50 US PNT PRT
0020	3139 247 53681	WINDOW Q50 US PNT PRT
0030	3139 247 53711	BUTTON L Q50 US PNT PRT
0035	3139 247 53721	BUTTON R Q50 US PNT PRT
0055	3139 247 54281	ASSY TRAY COVER DVD870
0070	3139 244 01461	LIGHT GUIDE Q50
0250	3139 247 54071	PLATE BACK Q50 EUR PNT PRT
0300	3139 247 53731	COVER TO P Q50 US PNT PRT
0350	3139 228 87672	PROD.ASSY RC19237001/ 01 PACKED
0360▲	2422 070 98133	MAINSCORD EUR 1M5 BK B
0360▲	4822 321 10713	MAINSCORD 300V EUR 1M5 BK B (0.51 ONLY)
0365	3103 308 92610	CABLE AUDIO 2X2RCA MALE 1.5MTR
0366	4822 321 61579	VIDEO-CABLE
0372	3111 170 21992	SCART CABLE (L=1.10M) BMS
0375	3139 246 11211	IFU DVD Q50/05X
0375	3139 246 11181	IFU DVD Q50/00X
1101	3104 157 11200	CWAS FLEX DVD 16 130 32S
1102	3104 157 11190	CWAS FLEX DVD 22 130 32S
1108	3139 110 35821	FFC 08P/209/08P BD 1MMP FOLDED
1111	3104 157 11200	CWAS FLEX DVD 16 130 32S
1112	3104 157 11190	CWAS FLEX DVD 22 130 32S
1113	3104 157 11190	CWAS FLEX DVD 22 130 32S
1114	3139 110 35811	FFC 22P/180/22P AD 1MMP FOLDED
1117	3139 110 35831	FFC 08P/241/08P BD 1MMP FOLDED

AV PWB DVDQ50 /001 /02 1 /051**Various**

1100	2422 025 16525	CON BM V 16P F 1.00 FFC 0.3 R
1101	4822 265 11154	52030-2211 (22P)
1301	4822 265 11154	52030-2211 (22P)
1400	2422 026 05088	CON BM CN 1CH H 6P F B
1401	2422 026 05189	CON BM CN 1CH H 4P F YEWHRD
1402	2422 026 05188	CON BM CN 1IN H 3P F TCS7927 E
1404	4822 267 31626	



2100	4822 126 14305	100nF 10% 16V 0603
2101	4822 124 40184	1000μF 20% 10V
2102	4822 126 14305	100nF 10% 16V 0603

2103	4822 124 40207	100µF 20% 25V	3111	4822 117 12902	8k2 1% 0.063W 0603	7202	4822 130 42804	BC817-25
2104	4822 124 40207	100µF 20% 25V	3112	4822 051 30759	75Ω 5% 0.062W	7203	4822 130 42804	BC817-25
2105	4822 126 14305	100nF 10% 16V 0603	3113	4822 051 30223	22k 5% 0.062W	7204	4822 130 42804	BC817-25
2106	4822 124 40207	100µF 20% 25V	3114	4822 051 30759	75Ω 5% 0.062W	7205	4822 130 42804	BC817-25
2107	3198 017 44740	0603 10V 470nF COL	3115	4822 051 30153	15k 5% 0.062W	7300	4822 130 60511	BC847B
2109	4822 124 40207	100µF 20% 25V	3116	4822 051 30103	10k 5% 0.062W	7302	4822 130 42804	BC817-25
2110	4822 126 14305	100nF 10% 16V 0603	3118	4822 117 11152	4Ω7 5%	7305	4822 130 42804	BC817-25
2111	4822 124 40184	1000µF 20% 10V	3120	4822 051 30101	100Ω 5% 0.062W	7400	9322 165 60668	IC SM LA7109 (TSAJ) R
2113	4822 126 13883	220pF 5% 50V	3121	4822 051 30101	100Ω 5% 0.062W	7401	4822 209 16978	LF33CV
2114	4822 126 13883	220pF 5% 50V	3122	4822 051 30689	68Ω 5% 0.063W 0603	7402	4822 130 10845	GP1F32T
2115	4822 126 13883	220pF 5% 50V			RC21 RST SM	7502	9352 640 74118	IC SM UDA1334TS/Ni (PHSE) R
2116	4822 126 13883	220pF 5% 50V	3200	4822 051 30479	47Ω 5% 0.062W	7503	4822 209 30095	LM833D
2117	4822 124 23052	100µF 20% 16V	3201	4822 051 30479	47Ω 5% 0.062W	7504	9352 640 74118	IC SM UDA1334TS/Ni (PHSE) R
2118	4822 124 21732	10µF 20% 25V	3204	4822 117 12902	8k2 1% 0.063W 0603	7505	4822 209 30095	LM833D
2119	3198 017 44740	0603 10V 470nF COL	3205	4822 117 12902	8k2 1% 0.063W 0603	7600	9965 000 06290	AD1852 (DAC 24BIT/ 96KHz)
2120	4822 126 14305	100nF 10% 16V 0603	3206	4822 051 30103	10k 5% 0.062W	7601	9322 067 00668	IC SM OP275GS (ANAO) R
2121	4822 124 11947	10µF 20% 16V	3208	4822 051 30103	10k 5% 0.062W	7602	4822 209 30095	LM833D
2122	4822 122 33777	47pF 5% 63V	3209	4822 051 30472	4k7 5% 0.062W	7605	4822 209 30095	LM833D
2123	4822 126 14305	100nF 10% 16V 0603	3210	4822 051 30472	4k7 5% 0.062W	7606	5322 209 14481	HEF4053BT
2124	4822 122 33777	47pF 5% 63V	3212	4822 051 30472	4k7 5% 0.062W			
2125	4822 126 13883	220pF 5% 50V	3213	4822 051 30472	4k7 5% 0.062W			
2126	4822 126 13883	220pF 5% 50V	3216	4822 051 30103	10k 5% 0.062W			
2127	4822 126 13883	220pF 5% 50V	3217	4822 117 12902	8k2 1% 0.063W 0603			
2130	4822 124 41584	100µF 20% 10V	3219	4822 051 30103	10k 5% 0.062W			
2202	4822 124 80231	47µF 20% 16V	3220	4822 051 30272	2k7 5% 0.062W			
2204	4822 124 80231	47µF 20% 16V	3221	4822 051 30272	2k7 5% 0.062W			
2209	4822 124 11947	10µF 20% 16V	3222	4822 051 30272	2k7 5% 0.062W			
2210	4822 124 11947	10µF 20% 16V	3223	4822 051 30471	470Ω 5% 0.062W			
2213	4822 124 11947	10µF 20% 16V	3224	4822 051 30221	220Ω 5% 0.062W			
2214	4822 124 11947	10µF 20% 16V	3225	4822 051 30471	470Ω 5% 0.062W			
2215	4822 126 14305	100nF 10% 16V 0603	3226	4822 117 12902	8k2 1% 0.063W 0603			
2216	4822 126 14305	100nF 10% 16V 0603	3227	4822 051 30471	470Ω 5% 0.062W			
2219	4822 126 14305	100nF 10% 16V 0603	3228	4822 051 30221	220Ω 5% 0.062W			
2220	4822 126 14305	100nF 10% 16V 0603	3229	4822 051 30471	470Ω 5% 0.062W			
2221	4822 126 14305	100nF 10% 16V 0603	3230	4822 051 30272	2k7 5% 0.062W			
2223	4822 126 14305	100nF 10% 16V 0603	3231	4822 051 30272	2k7 5% 0.062W			
2224	4822 122 31765	100pF 2% 63V	3232	4822 051 30272	2k7 5% 0.062W			
2225	4822 122 31765	100pF 2% 63V	3233	4822 051 30103	10k 5% 0.062W			
2227	4822 122 31765	100pF 2% 63V	3234	4822 051 30103	10k 5% 0.062W			
2228	4822 122 31765	100pF 2% 63V	3235	4822 051 30103	10k 5% 0.062W			
2230	4822 126 14305	100nF 10% 16V 0603	3236	4822 051 30103	10k 5% 0.062W			
2231	4822 126 14305	100nF 10% 16V 0603	3237	4822 051 30103	10k 5% 0.062W			
2234	4822 126 14305	100nF 10% 16V 0603	3238	4822 051 30103	10k 5% 0.062W			
2235	4822 126 14305	100nF 10% 16V 0603	3300	4822 117 12903	1k8 1% 0.063W 0603			
2238	4822 124 40207	100µF 20% 25V	3301	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2239	4822 124 40207	100µF 20% 25V						
2240	4822 124 40207	100µF 20% 25V	3302	4822 051 30471	470Ω 5% 0.062W			
2242	4822 124 40207	100µF 20% 25V	3303	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2243	4822 126 13909	680pF 10% 50V						
2245	4822 126 13909	680pF 10% 50V	3304	4822 051 30272	2k7 5% 0.062W			
2246	3198 016 31020	0603 25V 1nF	3308	4822 117 12903	1k8 1% 0.063W 0603			
2247	3198 016 31020	0603 25V 1nF	3309	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2248	3198 016 31020	0603 25V 1nF						
2249	3198 016 31020	0603 25V 1nF	3311	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2251	4822 122 33761	22pF 5% 50V						
2306	4822 126 14305	100nF 10% 16V 0603	3314	4822 051 30103	10k 5% 0.062W			
2307	4822 126 14305	100nF 10% 16V 0603	3315	4822 051 30103	10k 5% 0.062W			
2308	4822 126 14305	100nF 10% 16V 0603	3317	4822 051 30222	2k2 5% 0.062W			
2309	3198 016 38210	0603 25V 820P COL	3318	4822 117 12903	1k8 1% 0.063W 0603			
2310	4822 126 14241	0603 50V 330P COL R	3319	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2311	4822 124 22339	100UE 16V						
2312	4822 126 14305	100nF 10% 16V 0603	3320	4822 051 30562	5k6 5% 0.063W 0603 RC21 RST SM			
2313	3198 016 38210	0603 25V 820P COL						
2314	4822 126 14241	0603 50V 330P COL R	3321	4822 051 30471	470Ω 5% 0.062W			
2316	4822 126 13909	680pF 10% 50V	3322	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2317	4822 126 14305	100nF 10% 16V 0603						
2318	3198 016 38210	0603 25V 820P COL	3323	4822 051 30272	2k7 5% 0.062W			
2319	4822 126 14241	0603 50V 330P COL R	3324	4822 117 12903	1k8 1% 0.063W 0603			
2320	4822 124 11947	10µF 20% 16V	3325	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2321	4822 124 22339	100UE 16V						
2322	4822 124 11947	10µF 20% 16V	3327	4822 051 30472	4k7 5% 0.062W			
2323	3198 016 38210	0603 25V 820P COL	3328	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2324	4822 126 14241	0603 50V 330P COL R						
2325	4822 124 11947	10µF 20% 16V	3331	4822 051 30103	10k 5% 0.062W			
2327	4822 126 13909	680pF 10% 50V	3334	4822 051 30472	4k7 5% 0.062W			
2328	4822 126 14305	100nF 10% 16V 0603	3335	4822 051 30272	2k7 5% 0.062W			
2329	4822 126 14305	100nF 10% 16V 0603						
2330	4822 124 41584	100µF 20% 10V						
2331	4822 124 41584	100µF 20% 10V						
2335	4822 126 14305	100nF 10% 16V 0603						
2336	4822 126 14305	100nF 10% 16V 0603						
2337	4822 126 14305	100nF 10% 16V 0603						
2338	4822 126 14305	100nF 10% 16V 0603						

3100	4822 117 11 152	4Ω7 5%
3101	4822 117 11 152	4Ω7 5%
3105	4822 117 11 152	4Ω7 5%
3106	4822 051 30759	75Ω 5% 0.062W
3108	4822 051 30759	75Ω 5% 0.062W
3109	4822 051 30223	22k 5% 0.062W
3110	4822 051 30222	2k2 5% 0.062W

7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25

5103	4822 157 70601	100µH (920927085A)
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6300	4822 130 83649	1SS355
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7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25

3200	4822 051 30101	100Ω 5% 0.062W
3201	4822 051 30101	100Ω 5% 0.062W
3202	4822 051 30103	10k 5% 0.062W
3203	4822 051 30103	10k 5% 0.062W
3204	4822 051 30103	10k 5% 0.062W
3213	4822 117 11152	4Ω7 5%
3214	4822 051 20008	0Ω jumper . (0805)
3215	4822 051 30472	4k7 5% 0.062W
3229	4822 051 30759	75Ω 5% 0.062W
3230	4822 117 11817	1k2 1% 1/16W
3231	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3232	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3233	5322 117 13036	1k2 1% 0.063W 0603 RC22H

3234	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3235	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3236	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3237	4822 051 30759	75Ω 5% 0.062W
3238	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3239	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3240	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3241	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3242	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3243	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3244	4822 117 11817	1k2 1% 1/16W
3246	4822 051 30759	75Ω 5% 0.062W
3247	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3248	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3249	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3250	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3251	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3252	5322 117 13036	1k2 1% 0.063W 0603 RC22H
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5202	4822 157 11828	22U 20% SM 0805
5203	4822 051 20008	0R00 JUMP. (0805)
5204	4822 157 71593	10μH 10%
5205	4822 157 11828	22U 20% SM 0805
5206	4822 051 20008	0R00 JUMP. (0805)
5207	4822 157 71593	10μH 10%
5208	4822 157 11828	22U 20% SM 0805
5209	4822 051 20008	0R00 JUMP. (0805)
5210	4822 157 71593	10μH 10%



7201	4822 209 17398	LD1117DT33
7203	9322 168 16671	IC SM ADV7190KST (ANA0) Y
7204	9322 167 49685	IC SM AD8061ART (ANA0) R
7205	9322 167 49685	IC SM AD8061ART (ANA0) R
7207	9322 167 49685	IC SM AD8061ART (ANA0) R